DOCUMENT RESUME

ED 071 096 24 CS 200 321

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TITLE An Evaluation of a Method of Teaching Listening Improvement. Final Report.
INSTITUTION Ohio Univ., Athens.
SPONS AGENCY National Center for Educational Research and Development (DHEW/OE), Washington, D.C.
BUREAU NO BR-1-E-099
PUB DATE Sep 72
GRANT OEG-5-71-0044(509)
NOTE 98p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS Audio Passive Laboratories; Aural Stimuli; *College Students; *Listening Comprehension; *Listening Skills; Listening Tests; Reading Skills; Recall (Psychological)

ABSTRACT

The purpose of this study was to test the hypothesis that increasing the rate of cognitive structuring of aurally input data through the use of compressed speech would improve scores on listening tests which measure ability in listening subskills. The hypothesis predicted that subjects trained in listening for details would improve in this subskill but would also improve in other subskills, such as following directions, recognizing transitions, etc. The Brown-Carlsen, Rossiter, and Xeros tests were used as pretests and posttests. Subjects listened to taped texts compressed to 275 words per minute and were tested on immediate memory for details. Experimental subjects improved significantly more than the control group, but mostly on those parts of the tests which were similar to their training--Part E of the Brown-Carlsen (listening to lecture) and Part 1 of the Rossiter (listening for details). There was little evidence that increasing the rate of handling aurally input data affected subskills other than those used in the training sessions. (Author/DI)

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ED 071070

Final Report
Project No. 1-E-099
Grant No. OEG-5-71-0044(509)

AN EVALUATION OF A METHOD OF TEACHING LISTENING IMPROVEMENT

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September, 1972

The research reported herein was performed pursuant to a grant with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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Office of Education
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ABSTRACT

The purpose of this study was to test the hypothesis that increasing the rate of cognitive structuring of aurally input data through the use of compressed speech would improve scores on listening tests which measure ability in what is generally called listening subskills. The hypothesis predicted that Ss trained in listening for details would improve in this subskill, but they would also improve in other subskills, such as following directions, recognizing transitions, etc. The Brown-Carlsen, Rossiter, and Xeros tests were used as pretests and posttests. Ss listened to taped texts compressed to 275 wpm and were tested on immediate memory for details. Training continued for two hours each week for ten weeks.

Ss improved significantly more than the control group, but mostly on those parts of the tests which were similar to their training--Part E of the Brown-Carlsen (listening to lecture) and Part I of the Rossiter (listening for details). There was little evidence that increasing the rate of handling aurally input data affected subskills other than those used in the training sessions.

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CHAPTER 1

INTRODUCTION

In 1964 Petrie published an article in which he claimed that we do not know (1) how to isolate and measure listening ability validly and reliably, (2) whethere there is a unique listening ability or many, and (3) how to improve listening ability. Caffrey and Spearritt have demonstrated that there is a listening ability factorially different from reading and other linguistic abilities, suggesting that listening may be a single ability, but Petrie's other contentions are still generating controversy. Indeed, the first one is too, in spite of Caffrey and Spearritt.

Background of the study

Whether people can be taught at all to listen better depends on many factors. The foremost problem is concerned with the question of what is the process we call listening. As noted above, Petrie suggested that we do not really know whether this process is single and unique, or multivariate and coterminous with other human skills.

Newman and Horowitz studied listening in a novel way, asking some Ss to listen to and others to read a very short story. Both the listeners and the readers were then split into two groups. One group was asked to write what it had heard or read and the other was asked to say it into a tape recorder. By an ingenious method of scoring, summing what they called "bits of information," which Sincoff later called "isolates of meaning," they discovered (1) that listeners distorted more than readers but omitted fewer data, (2) that listeners could reproduce sentences more nearly exactly and with better structure, (3) that asking a listener to write what he heard or a reader to say what he read always produced lower scores, and (4) listeners who reported orally and readers who wrote what they had read scored about the same on the test but missed different items. These last two discoveries suggest that the cognitive structuring of input data is not the same when the input is aural as when it is visual. This is supported by the fact that correlations between scores on listening tests and scores on reading tests are usually about .50.

Caffrey used nine tests in the study in which he isolated a factor which he called "auding." Spearritt used 37. His main hypothesis was that the variance among scores on listening comprehension tests can be accounted for by reasoning, verbal comprehension, attention, and memory, and no separate factor of listening need be postulated. Many of the tests he used were standardized tests prepared by the Educational Testing Service, the Australian

Council for Educational Research, and others. Eight tests of listening comprehension were prepared and analyzed by Spearritt and included in the test battery. One of these contained material from the STEP test (Sequential Tests for Educational Progress) prepared by the Educational Testing Service. These listening tests were named by Spearritt as follows:

1. Listening vocabulary
2. Listening for general significance
3. Listening to note details
4. Listening for inferences
5. Listening to a short talk
6. Listening to spontaneous speech
7. Listening to boys' talk
8. Listening to girls' talk

The other 28 tests were grouped under such general headings as inductive reasoning, deductive reasoning, general reasoning, verbal comprehension, attention, auditory resistance, meaningful memory, rote memory, and span memory. Some tests were administered orally and some were administered in printed form, for example arithmetic, reading, Thurstone's reading test, etc.

Presumably, if the skills and capacities required to do well on Spearritt's listening tests could be accounted for by the skills required to do well in reasoning, verbal comprehension, attention, and memory, a factor analysis would load the correlations in those areas and no separate factor for listening would appear. Listening could then be considered an amalgam of those four capacities and we could improve it by teaching them.

Such was not the case. The data on the listening tests did not fall into the loadings on other factors. Spearritt found these seven factors in his data:

1. Inductive reasoning
2. Deductive reasoning
3. Memory span
4. Memory (both rote and meaningful, but somewhat different between boys and girls)
5. Auditory resistance
6. Verbal comprehension
7. Listening comprehension

It is interesting to note that the memory factor showed sex differences. In addition, Spearritt found some indication of a separate factor of listening comprehension for girls.

These findings suggest that there may be a single unique ability to do what we call listening. Petrie's second suggestion may be on the way to an answer. The teaching and testing of listening has

not thus far been based on the assumption that listening is many different skills. It will be illuminating to consider a number of studies in which students were "taught to listen better" in order to discover what they were taught, i.e., what these listening sub-skills are.

Hollingsworth (1964) used the 10 Listening Skill Builders from The Science Research Associates program, and 10 tapes selected randomly from The Educational Development Laboratory's Listen and Read. Neither of these teaching techniques, used in separate experimental groups, generated any more improvement than the control group demonstrated. In another study Hollingsworth (1966) taught 29 middle-management personnel in a large industrial concern as follows: Each 2-hour class period had a Listening Skill Builder, a lecture-discussion period, an experience in note-taking, a written exercise, and an assignment for reading in a textbook (Are you Listening). The lecture titles included "Why Study Listening?," "Listen Well," "Bad Listening Habits," "Listening and Note-Taking," and "Selective Listening." Hollingsworth used the Brown-Carlsen for his pretest and posttest and found that scores went up 50 percent. But he used no control group. In his other study he had found that both the experimental and control groups improved significantly, but about the same. He would have had significant improvement in that study if he had not had a control group.

Dow (1955) published a report of the way listening was taught at Michigan State. Their objectives were to increase knowledge and understanding, improve skills and abilities, and develop better attitudes toward and appreciation of listening. In order to accomplish these objectives they taught students something about the importance of listening, how to take notes, and how to locate the main points in a message. They presented exercises in listening to informative material and seven to twenty-minute lectures, after which the listeners were tested. Listeners scored their own answers. Critical listening was taught in about the same way: teaching, practice, testing.

Erickson (1954) taught 130 college students for about four hours scattered over a 12-week period. The first session was a lecture on the importance of listening, the need for a purpose in listening, getting the mian idea and supporting details, listening for specific information, and the purpose of the experiment. Then came 15 exercises from the McCall-Crabbs Test Lessons in Reading and 3 from Brown's book Efficient Reading.

Irvin (1954) asked his students to construct a code of listening manners, to make lists of their own listening weaknesses and strengths, to list the distractions in the room, to write down central ideas in an oral message, to engage in what he called "round-robin listening activities," to stand and repeat what the instructors had just said, to repeat a set of oral instructions given them, to practice outlining oral speeches, to select one main point and

its supporting data from a speech and write it down, to introspect and report points where their minds began to wander, to take notes only on the introduction and conclusion of a speech (after which they were asked to write the outline of the body of the speech), and to list words, phrases, and illustrations that caused them to react emotionally.

Hellman (1951) had six training lessons in which he pointed out a number of listening habits which "authorities believed differentiated between good and poor listeners," built a respect for listening, explained projection, showed the students how their own ideas colored their reactions to speakers and what they said, and provided practice in recognizing main ideas.

M. Johnson (1968) taught listening in three ways to college students. The first group heard 6 10-minute taped lectures, one per week. The first lecture dealt with listening. The other five treated subject areas within the field of speech. Students were tested after each lecture. The second group listened to four classroom student speakers, each of whom had prepared in advance short-answer test items which only one of them administered immediately after the four speeches were finished; thus students had to listen to all four speeches as if they were going to be tested on all of them, since they did not know in advance which one would be the subject of the test. The scored answer sheets were given to the speaker to let him see how well he had communicated and then to the listeners to let them see how well they had listened. The third group was a public-speaking class. Students here had to listen -- or sit and pretend to listen -- to about 100 speeches. They were not tested on the speeches, but they were required to evaluate them -- that is, assign a grade to them.

The Brown-Carlsen Listening Comprehension test was used for the pretest and posttest. The first two groups improved significantly, but the third did not. Improvement of the first two groups was almost exactly the same. One wonders whether the improvement found was due to improvement in listening or improvement in sending the message by the speaker.

Orr and Friedman (1967) tested a hypothesis that listeners might be able to handle aurally input data at higher speeds if they were given a precis of the message to be heard and some key words to study before they heard the message. It did not help. Abrams and others had discovered that taking notes or having an outline in hand before the message was presented did not help.

Recently a number of commercial firms have prepared training programs designed to improve listening skills at various levels. The Educational Development Laboratory, for example, has prepared training tapes which combine listening and reading for grades 1 through college. Most of the programs contain 15 tapes, and seek to develop these skills, among others: recognizing sounds in the en-

vironment, finding the stated main ideas in a story, noticing the correct order of happenings, listening for details, noting likenesses and differences between people and countries, recognizing causes and effects, learning how to recognize clues to predict outcomes, using the five senses while listening in order to share experiences described in poetry, making mental pictures of something that is being described, understanding how social needs make a character act as he does, noticing how attitudes and customs are affected by the setting, learning to recognize the climax in a story, identifying the elements of exaggeration that make a tall tale amusing, learning to recognize such propaganda techniques as name-calling, testimony, and bandwagon, learning to distinguish between fact and opinion, learning to reason, etc.

The list above is specified for the third and sixth grades, and it is not complete. The teaching of listening is integrated with the teaching of reading and thinking. Tapes are provided and studying can be done individually or in groups.

Ella Erway has developed a listening training program for the McGraw-Hill Book Company. It was designed for use in a public speaking class at the upper high school and college levels. There are seven progressive programs, all recorded on audio tape, which can be used individually or in groups. The subskills developed are as follows: To state the central idea, to list the main divisions of a speech, to identify support material, to identify emotional appeals, and to evaluate the speaker's language. Obviously, most of the messages presented to listeners are speeches, ranging up to eight minutes in length.

The Xerox Corporation has prepared a three hour training program designed for adults. Listeners hear short statements designed to train them to analyze constantly what is said, organize the statement into main points and supporting reasons, remember outlines by the use of key words, discriminate advantages from disadvantages, and discriminate between relevancies and irrelevancies. In addition, listeners should learn to cut through such distractions as background noise, unusual accents and dialects, speaker disorganization and emotion, and superfluous material. The material is presented on audio tape and includes a pretest and a posttest. Like most commercial training programs, it has rather high face validity, but no data can be obtained on its effectiveness.

Enough description of teaching techniques has been presented here to demonstrate the confusion about what should be taught. Much, much more could be said. Perhaps the keystone to this arch of confusion was added by Baker (1956) when he wrote, "I believe I am teaching important aspects of listening whenever I teach spelling, punctuation, matters of style, speech criticism, or oral reading."

The teaching of listening is at present somewhat like the "curing" of stuttering. It has been said that in some cases anything will stop a stutterer from blocking and in others the best clinical

therapy in the world will have no effect. One stutterer was "cured," for example, when his father angrily dumped a basketful of fish over his head, and others simply by maturation -- that is, no therapy at all. Others have been cured by moving (where the drinking water was different!) and by excising a portion of the tongue.

And so it seems with the teaching of listening. Bakan (1956) listed five precarious assumptions workers in this field seem to make:

1. That listening is a unitary skill.
2. That uniform training should be given to all subjects.
3. That listening is teachable.
4. That listening is independent of other psychological variables.
5. That the effectiveness of listening training can be evaluated at the end of the training period.

It seems no more certain that listening is teachable than it does that stuttering is curable. Nor does it seem tenable in spite of what Bakan wrote that listening is a composite of peripheral skills. The great variety of "skills" selected for teaching and called by the generic name "listening" suggests that if listening is an aggregate of skills each skill must be almost specific to the occasion. When K. Johnson (1951) set out to plan his program he "...considered the situation in which the college student was engaged and determined that a course in listening designed to help the student in the classroom lecture type situation would constitute the most beneficial approach." To Johnson, then, the skills involved in this kind of situation -- as he perceived them to be -- became listening skills, and his program a listening training program. It is quite doubtful whether a different person facing the same problem and trying to imagine the skills involved would have made the same list Johnson made. It is quite certain that most other researchers have constructed their lists with other situations in mind. Thus hardly any list is at all like another, and all listening training programs are different.

We have been concentrating on what Gray and Wise (1959) have called external factors:

> That attempts to evaluate and improve these external factors may be entirely worthwhile nobody can deny, provided they are made with due regard for recognized scientific method; no suggestion is intended that the end product of listening -- comprehension and retention -- might not be improved by increasing the efficacy of these external factors. But careful studies in listening...need, among other things, further research in the analysis of listening as a "discrete linguistic function;" they need, moreover, further research than subjective guesses on the influences which affect the process, be they intrinsic or extrinsic.

Perhaps, as Gray and Wise suggest, listening is a unitary skill. Perhaps beneath all these external factors or peripheral skills lies a cognitive skill that generates some degree of proficiency in all of them. Some suggestion of this may be found in what we know about the basic rate of cognitive processing of input data. It may be that this rate can be increased and time provided (Fessenden, 1952) for the processing of additional data. Orr and Friedman hypothesized that one limitation on a listener's ability to handle speeded speech is his inability to process the data as it is sent. Their study was an attempt to reduce the burden of the listener by limiting the number of choices he had to make.

Finally, it seems obvious that there is a tendency among teachers of listening to settle on a group of peripheral skills and call them listening. When those skills are learned, the student has become a good listener. But this can be true only by that definition of listening and by no other.

It might be worthwhile to list some of the major abilities that makers of listening tests have used at various times to construct what they called "listening" tests:

To get the main ideas
To hear the facts
To make valid inferences
To get the central theme
To retain pertinent content
To identify the main and supporting ideas
To perceive differences between similarly worded statements
To identify correct English usage
To use contextual clues to determine "word meanings"
To comprehend oral instructions
To hear details
To hear difficult material
To adjust to the speaker
To listen under bad conditions
To resist the influence of emotion laden words and arguments
To take notes
To structuralize a speech
To prevent the facts from interfering with hearing the main idea
To improve concentration by use of special techniques
To hear the speaker's words
To develop curiosity
To follow directions
To judge relevancy
To recognize topic sentences and to associate each topic sentence with some previous bit of knowledge

To recognize what the speaker wants the listener to do
To understand how words can create a mood
To understand connotative meanings
To predict what will happen
To understand denotative meanings
To identify speaker attitudes
To get meaning from imagery
To notice sequences of ideas and details
To check for the accuracy of new information
To avoid the effects of projection
To evaluate and apply material presented
To introspect and analyze one's own listening disabilities
To judge validity and adequacy of main ideas
To discriminate between fact and fancy
To judge whether the speaker has accomplished his purpose
To recognize self-contradictions by the speaker
To be aware of persuasive devices used by the speaker

It seems likely that, if listening is a conglomerate of subskills, no one knows what they are. We have evidence from Caffrey and Spearritt that listening is a separate skill like reading, hitting a baseball, and logical thinking. But we do not yet know how to go about teaching something that will result in better listening. Even if we were able to do it, we could not say it was an improvement in listening capacity. We could only say that it was an improvement in scores on the test we used. If we had used some other test the scores might not have changed from the pretest to the posttest.

Perhaps the subskills listed above are really specific to the situation, the purpose of the listener, the speaker, the fatigue of the listener, etc. It may be that a listener can hear and remember the main points of a speech well enough whenever that is his purpose, but then he may not hear many of the details, or much of the supporting material. He may be able to make inferences about the speaker if that is what he sets his mind to, but then not hear much of the content of the message, maybe only those implications from which he made his inferences.

Even so, even this kind of capacity seems to have varying limits among people and within people at various times. Like all other human skills it should be improvable. If we could agree on a set of subskills to be taught, we should be able to change behavior in those areas. Yet we have not always been able to do even that much. Perhaps we should be trying to improve some capacity basic to all of the subskills.

When Rossiter was developing his listening test, he presented his fourteen messages on audio tape, at three speeds: 175, 233, 265 words per minute. He found that the mean scores for the 74 listeners at each rate declined from 44.33 at 175 wpm, to 34.95 at 233 wpm, and to 29.63 at 265 wpm. All of the words were easily intelligible at all of these rates. The declining scores as the rate at which data was sent increased suggests that the listeners were having problems in handling the data.

It is generally accepted that the capacity of the human organism to handle data is limited. For example, Broadbent (1958) found that "two perceptions plus two switches of attention" required one and a half seconds. Moray and Davis found the perception of single digits to be faster: it took only a quarter of a second for their Ss to make an echoic response, but this was quite a different fask from the one posed by Broadbent. Moray (1960) also found that his Ss could handle not more than 4 digits per second. Kristofferson (1967) measured what he called Minimum Dwell Time (a period of time during which the organism remains in a state before switching) and found that the minimum dwell time plus switching time demanded 130 milliseconds. Broadbent called this combination of minimum dwell time and switching time -- which apparently are confounded and measured together -- perception time. Although the time durations reported in the literature are not in exact agreement, there is agreement that they provide a ceiling on the organism's capacity, and that the system is almost constantly overloaded, resulting in loss of input data.

The researchers named above, and scores of others, dealt with auditory input. Sperling (1960) found similar results with visual input. In general, the organism must centralize its attention on data input through one channel, although there is disagreement about the ability to monitor other channels (Moray, 1965). A good deal of research has suggested that S can attend one channel adequately while sampling at least one other channel, probably periodically. Moray and Barnett (1965) presented 4 stimuli (letters of the alphabet) within two seconds over each of 4 channels. Ss performed less well than when 2 channels were used, and when 2 channels were used, Ss could report most of the stimuli from one channel correctly and then recall some data from the other channel in a disorganized way. Obviously, the organism was overloaded and, equally obviously, Ss were able to monitor the unattended channel at some low level while performing adequately the assigned task on on the selected channel when the task was not too difficult. Moray (1960) found that errors in performance increased as the presentation rate increased, suggesting that at some point the rate of data input exceeded the capacity of the organism to handle the data even when only one channel was used and the selection made in advance.

Most researchers in this area posit two memory systems, short-term and long-term (Norman, 1969; Broadbent, 1958; Deutsch and Deutsch, 1963; Trabasso and Bower, 1968; Morton, 1969). Shiffrin and Atkinson (1969) suggest three: the sensory register, wherein

(at least in the visual modality) memory decays in milliseconds; the short-term storage (STS) wherein memory decays in less than 30 seconds unless rehearsal takes place; and the long-term store (LTS) where Shiffrin and Atkinson assume memory to be permanent. S must search this LTS with input data for a "match" in order to categorize the data and thus assign meaning to it. To search all of the LTS would be prohibitive, so most researchers, including Shiffrin and Atkinson, posit some kind of "content-addressable" or "self-addressable" system which generates a smaller ensemble or set, which is then searched. The search process is usually considered a recursive loop in which locations or "images" are selected for examination. The response generation process then makes a decision, which results in a continuation or termination of the search, the sending of inhibitory impulses to some part of the reticular formation, or the selection of the incoming data for conscious attention. These processes are often delayed by intervening items, proactive interference, irrelevant data, intrusions, overloading, etc. Sutherland and McIntosh (1964) have developed a theory which they call "the conservation of attention law," which fits the experimental data reported here and elsewhere. Their law posits a limit on the amount of attention S has to use. The more he attends to and learns about cue A, the less he will learn about cue B. Weaver (1964) has called this "attention energy."

There is some scant evidence that the processes involved in data input and retrieval can be speeded up with practice. Part of it has been reported in the literature on improvement of reading rate and comprehension. Leckart, Keeling, and Bakan (1966), Leckart (1966), and Bakan and Leckart (1965) found that "looking time" decreased with practice.

Presumably, if the rate of cognitive structuring of aurally input data could be raised, a listener could hear more. This is not to say that he would--he might instead use the time thus gained for daydreaming. But, just as we hope that increasing one's ability to read faster will result in faster reading, so we must hope that a listener whose rate of cognitive structuring of data has been increased will use his extra time in handling more data. Perhaps this rate can be raised by practice, just as it is raised in programs of reading improvement. This process might be the basic skill underlying all the so-called peripheral skills that have been discussed in this report.

Scope of the study

Any study, teaching, or testing of listening processes may be visualized as falling within one or more of these three areas:

1. Listening capacity. It seems obvious that no one can receive

process, and retain all that is said and implied in a message which he hears. The proportion of the data in a message thus "heard" seems to vary among people and within individuals. Since no one can ever hear everything in a message of any considerable size and complexity, it is logical that every person has a limited capacity for receiving and processing aurally input data. Training and testing programs support these statements. Some listeners consistently score better on tests than others, and all listeners score better at some times than at others. The work of Broadbent, Moray, Treisman, and many others also demonstrates these limits.

2. The willingness to listen. It is likely that the willingness to listen has no relation to the capacity of the human organism to handle data, but arises from other variables such as autistic needs, social situations, purposes, etc.

3. Evaluation of the message. The acceptance or rejection of parts or all of the message, whether accomplished through logical processes, gut judgments, social pressures, or whatever, probably occurs constantly in the listener. Attempts to improve listener evaluation of messages have almost always taken the form of teaching logic or the techniques of propaganda analysis to potential listeners. And they have almost always been directed toward helping the listener to decide what to reject in the message--that is, they seem negatively directed.

This study was concerned only with the first of these three areas--the capacity of the human organism to listen. Within that area, it was designed to discover whether that capacity could be improved by practice in trying to handle aurally input data when it was sent to the listener at rates faster than normal.

It was postulated that if the so-called subskills of listening described and listed earlier in this report depend on the central unitary skill of rapid cognitive structuring of aurally input data they should be improved if the rate at which Ss could handle data could be increased. Presumably, such an increase in the rate of cognitively structuring data would allow Ss to handle more data per unit of time. More and better inferences could be made, more items of information assigned to categories in the LTS system, etc., and Ss should score better after training than before on tests measuring performance on such subskills.

The hypothesis

The hypothesis tested in this study was as follows:

Practice in listening to texts compressed to 275 wpm will improve scores on tests assessing performance on some listening subskills.

Limits of the study

(1) The study was conducted at a state university. Ss were registered students in a course which gave them two quarter hours of credit. Most of them were freshmen. An unknown number of them took the course because the two credit hours fit their schedules. Some others enrolled because they were closed out of the courses they really wanted. Probably some others enrolled because there was no homework requirement. There was no motivation beyond (1) any desire the student had to improve himself and (2) any desire the student had to earn good marks.

Ss were not randomly chosen, nor were they rewarded, except as noted above, for good performance. Thus the situation was rather realistic, which suggests both advantages and disadvantages.

(2) It did not at first seem possible to prepare homogeneous texts for taping. The texts used during the fall and winter quarters were short stories, sections from novels and nonfiction books, speeches, articles from journals, etc. Difficulty levels as measured by the Dale-Chall formula and as rated by students varied widely. Some texts required the formation of new concepts, some of which were quite difficult. Inspection of scores made on two texts in the same day sometimes suggested that such factors were more important than had originally been believed. The entire experimental group sometimes scored very high on a test measuring recall of data presented in a narrative text but scored very low immediately afterward on a test measuring recall on an essay-type text. Since one controlling factor in the ordering of the texts heard throughout the quarter was fitting the texts to the constraints imposed by the 50-minute class period, kinds of texts could not be arranged in any homogeneous fashion, nor could difficulty levels be arranged very well in ascending or level order.

During the fall and winter quarters new narrative texts were taped and compressed. Dale-Chall ratings were computed on these texts and it was possible to arrange a schedule for the spring quarter in which a narrative text was used almost each class day. The Dale-Chall ratings placed the reading difficulty of these texts within a rather narrow range (4.9 to 6.4). These ratings may be seen in the class schedules in Appendix A. All but a few of these narrative texts were substantial in length, ranging from about 30 minutes to over 40 minutes. When these texts did not fill out the 50-minute period, shorter and more difficult texts, often from the Reader's Digest, were used to supplement the listening practice session. Thus the schedule for the spring quarter was quite differebt from the schedule for the fall and winter quarters. It was not completely satisfactory to test a variant of the research hypothesis by analyzing scores on these texts which were presumably equal in difficulty because of a problem described in (3), but the test was made and is described later in this section.

(3) Nothing was known about the difficulty of the tests used to assess the listening of the experimental group to the narrative texts. A rise in the mean scores through the quarter might mean that Ss were listening better or it might mean that the tests were becoming easier. Perhaps the only way to eliminate this confounding would be to assess the difficulty of the tests independently in the usual way: ask several hundred students to read and study the texts and then mark the test; or ask several hundred untrained Ss to listen to each text and mark the tests. This would have to be done for each of the tests used during this quarter, and each S — at least if the study were done in a listening situation — could be used only once. Such a procedure was not feasible in this study.

Significance of the study

If the null hypothesis of this study of this nature could be rejected, a method of improving listening behavior would be at least suggested. Some support could be generated for the thesis that the many listening subskills that have been the focus of the teaching and testing of listening have their roots in a single unitary skill, although this study could not prove that. However, demonstration that the listening subskills can be improved by the relatively simple process of listening to compressed speech texts would make possible the preparation of a training program that could be used by any instructor, whether he understands listening or not. This would make listening training easily available to every public school and college student in the country. It would probably be relatively simple to prepare programs for any grade level if the grade level of texts could be established, which is itself not simple.

CHAPTER II

METHODS OF THE STUDY

Collection of the data to test the hypothesis is described in the following sections of this division of the report.

It was not considered desirable to use the same tapes in the same order throughout the three quarters which were the duration of the study, although some of them were used in all quarters.* Thus the texts listened to changed somewhat each time and only a few texts could be analyzed with data collected during all three quarters. Since these few tapes were used at different times during the quarter and thus were preceded by varying listening experiences, throwing the data together seemed a doubtful procedure.

Consequently, although references to the data generated by the fall and winter quarters will be referred to, the analysis of the data to test the hypothesis used only the data from the spring quarter control and experimental groups.

Development of the tapes

Stories, speeches, journal articles, and segments of books (both fiction and nonfiction) were read into an Ampex recorder at the Language Laboratory of the University. The reader was seated in a small sound-proofed room with a control panel before him so that he controlled the recorder himself. The noise level in the room was unknown, but ambient white noise did not appear on any of the tapes, either at normal rate or when compressed.

The readers were graduate and undergraduate students and members of the faculty. They were selected but not trained. Those who read jerkily or with poor diction were not asked to read again and their recordings were discarded. All of the tapes retained for compression were found to be clearly intelligible even at 300 wpm; that is, each word could be recognized.

Six to twelve 60-second segments of each text were selected and the words counted. Words were considered to be a series of letters printed on the page with white spaces between them. The number of words in the segments were averaged and the mean number was considered to be the rate of that passage. This procedure obviously has faults, the greatest of which is the length of the words in the text. Other faults, such as the tendency of readers to

* The course outlines may be seen in Appendix A.

change rate in the middle of a text were partly eliminated by the process of selecting readers.

The tapes were sent to the Laboratory of Alternative Perceptions at the University of Louisville, where they were compressed to 275 wpm. Error in this process was $\pm$ 3 percent. Thus, to the extent that the word counting process is valid, a text compressed to 300 wpm would play at a rate somewhere between 291 and 309 wpm. Checking this by counting words in the compressed version showed that the rates did in fact fall within three percent error.

A twenty-item short-answer recall test was prepared for each text. The items were randomly divided into a ten-item posttest and a ten-item pretest and randomly ordered. The posttest was recorded on the tape immediately after the text. The pretest was recorded and spliced onto the tape immediately ahead of the text. In the classroom the tape was run from the beginning of the pretest to the end of the posttest without stopping.

Almost all of the test items measured immediate recall of explicit data. Not more than a dozen measured the ability to make valid inferences. The specificity-generality level of the data needed to answer items correctly was, of course, somewhat variable, but very few items asked for such highly specific data as dates. In addition, only a few items presented a yes-no alternative. Most items forced the respondent to choose from a much greater ensemble. In these cases, the data seemed important to understanding the text. The items in several of the tests used may be inspected in Appendix B.

In most cases responses were easy to score reliably. A few items required the respondent to supply the exact words used in the text. Most required only that the concept be named or described. Thus an item in one test asked what three-word refrain a girl was constantly singing, and the answer was "Glory for me." All three of these words were required for the answer to be scored as correct. Another asked what was Billy Sunday's favorite impersonation. The answer was that of a baseball player sliding into home plate. Any set of words demonstrating that the listener knew the concept was accepted. Thus acceptable answers to this item had the player sliding into third base or not sliding at all.

The daily pretests were used prior to listening to the texts during the fall and winter quarters. In most cases this was a rather silly exercise as if I were asking students to know a text they had never read in a field that was totally unknown to them. In a few cases students had read the articles before, as "The Monkey's Paw." In such cases, where several students had read the article and attempted to respond to items on the pretest, they were sometimes able to answer one or two items correctly or none at all. Reading a text prior to listening to it had such an inconsiderable effect on pretest scores during the fall and winter quarters that it

was abandoned and the pretest items were moved to the end of the tape, thus making the posttest a twenty-item test during the spring quarter. It was these data which were used to test the hypothesis and for the test analyses reported in Appendix C.

Analysis of the daily tests

Data generated each day by the posttests (during the fall and winter quarters) and by the twenty-item tests (during the spring quarter) were analyzed on an IBM 360/44 computer, using the SCORE program. Responses were right or wrong on each item. This meant that responses to 10 (or 20) items made by each listener were fed to the computer for analysis.

The output produced a KR-20 estimate of reliability, a difficulty index (simple proportion of Ss marking an item correctly, two discrimination indexes, and the mean and standard deviation of each test).

The tests proved to be remarkably good. Although some items have zero discrimination indices, no test showed more than three of these, which did no harm except to reduce the length of the test. Data on these tests may be seen in Appendix D.

Forms for collecting data

The pretests and posttests. Data for the Brown-Carlsen were collected on the answer sheets prepared by Brown and sold by Harcourt-Brace and World. Data for the Rossiter Test were collected on IBM answer sheets. Both of these tests were scored by template and provided objective scores.

The Xerox test is subjectively scored. A previous study had generated an interrater reliability of .86 between two trained graduate students in scoring this test. In the present study, they were scored, after training, by a mature doctoral candidate who had had 4 years of experience as an assistant professor at Montana State University. No attempt was made to assess reliability here. All the answer sheets, both before and after the listening training and for all three quarters, were scored by him. Facsimiles of the Xerox answer sheet were used.

Daily tests. The daily posttest data were collected on a mimeographed sheet which provided space for answers to the pretest items and asked Ss to rate the difficulty of the test, the difficulty of the text, and the interestingness of the text on a five-point scale. In addition, Ss were asked to record whether they had read the text previously.

The control group

The pretests and posttests were administered to a control group at about the same times at the beginning and end of the spring quarter. Control Ss were students enrolled in four classes in the fundamentals of communication. From the 55 Ss who completed all three pretests and posttests, Ss from the control classes were matched to Ss in the experimental group as closely as possible. The N was large enough after the pretests to provide an almost individually matched control group, but enough Ss failed to attend the posttest sessions that only the groups can be called matched. The data comparing the control and experimental groups can be seen in TABLE I, Appendix D.

The system used for matching experimental and control Ss involved dividing each group into high and low grade point average, and upper and lower academic class (freshmen and sophmores vs. juniors and seniors). Grade-point average (GPA) and class were used to create matching categories since these were found to be significant factors in preliminary research for this experiment.

CHAPTER III

RESULTS

Analysis of the data generated by the three pretests and posttests will be presented first to report the testing of the research hypothesis. In the second part of this chapter, some data will be presented as a tentative and suggestive method of determining improvement of listening trainees. Finally, some S ratings of difficulty of texts and tests and of interestingness of the texts and their intercorrelations will be presented.

Tests of the research hypothesis

The hypothesis was tested on data generated during the spring quarter. The data were analyzed on an IBM 360/44 computer, using an analysis of covariance provided by the OUL main program COVAR from the Ohio University center. This treatment provided adjusted posttest means for both the control and experimental groups, using the pretest scores as the covariate, and tested for significance of differences between the group adjusted posttest means.

TABLE I

Values for F Between Control and Experimental Group Scores on the Part Scores and Total Scores on the Brown-Carlsen Listen-Comprehension Test

Part	Subskill	Value for F
Part A	Following directions	0.12
Part B	Listening for details	2.42
Part C	Recognizing word meanings	0.01
Part D	Recognizing transitions	0.35
Part E	Lecture comprehension	5.69*
Total		1.75

*p = $<.05$

Detailed results of the analyses may be seen in Appendix E. TABLE I presents a summary of the analysis of the data generated

by the Brown-Carlsen Listening Comprehension Test. The null hypothesis could be rejected only on Part E of the test. This part was most nearly like the listening experiences provided during the training sessions. On the first four parts of the test, the experimental subjects improved no more than did the control subjects, although both improved. It would be easy to say, but difficult to believe, that the control group improved because Ss learned the format of the test and found the second experience with it easier. The instructions and procedures of the Brown-Carlsen are so simple that even eighth-graders can understand them on hearing them for the first time.... It would be possible to say that the control group improved because of maturation or because of increased sophistication gained during their usual classwork.

TABLE 2

Values for F Between Experimental and Control Group Scores on the Rossiter Listening Test

Part	Subskill	Value for F
1	Listening for facts	4.73*
2	Listening for ideas	3.04
3	Making inferences	1.79
Total		5.24*

*p = $<$.05

Inspection of TABLE 1 shows that the experimental group almost reached a significantly greater gain in Part B (listening for details). These two parts (B and E) were most nearly like the listening experiences provided the experimental group in the training sessions. They listened to long messages and marked test items which measured immediate memory for details.

Finally, inspection of TABLE 5a in Appendix E shows that the significance of the gain made by the experimental group over that made by the control group was not a gain at all. Their pretest and posttest means were exactly the same. The control group regressed. Perhaps, during the spring quarter at a big university there is no difference; i.e., no regression is gain.

Results for the Rossiter Listening Test may be seen in Table 2. Of the three subskills measured by this test, experimentals outgained controls only on "Listening for facts," which was the type of training used during the training sessions; i.e., almost all the test items concerned immediate memory for details. Only a few were inference items, and only a few asked for ideas as general as the items in the Rossiter test. This analysis showed, as did the analysis of the Brown-Carlsen, that there was no cross-over from one subskill to another. Since the research hypothesis was that improving one skill (rate of handling data) would improve other listening (sub)skills, the null hypothesis could not be rejected in spite of the significant gain of the experimentals over the controls on one part and on the total test score.

Results of the analysis of the Xerox Test may be seen in Table 3. These data should be interpreted with some caution. Data from previous administrations of this test demonstrated that the posttest is easier than the pretest. The analysis was made and the data presented here because even when the posttest and pretest (Tests A and B) were reversed experimental Ss outgained control Ss.

TABLE 3

Values for F Between Experimental and Control Group Scores on the Xerox Test

Part	Subskill	Value for F
Both messages	Listening for structure or outline of a message	8.33*

*p = <.01

This test asks Ss to write the main ideas and subdivisions of a message of about five minutes duration. In this study Ss were asked to write their answers in outline form to facilitate scoring. All other directions were received from the tape.

The results of this test diverged from the results of the other tests. They suggested that Ss were learning something in addition to details. Perhaps they were, and perhaps also only this test assessed it, but confidence in these data was not great enough to

allow rejection of the null hypothesis. The data can be only suggestive.

Analysis of daily test scores

As noted under part (3) under the heading of "Limitations of the Study" in CHAPTER I, the difficulty of the tests was confounded with the difficulty of the texts. This restriction places a serious limitation on the interpretation of the data about to be presented and deserves consideration. This part of the study was not part of the original design. It entailed preparing enough tapes of narrative texts of approximately equal difficulty (as measured by the Dale-Chall readability score) to run throughout the quarter. Various administrative problems resulted in the use of only eleven of these tapes. For example, one tape (a story by Galsworthy) was so long that it was presented in two training sessions. Ss reported that at the second session (the second half of the story, presented two days later) they had some trouble remembering place and people names. The second half of this story was therefore not used in the analysis.

The problem with the data presented in TABLE 4 (and in Appendix F) is no different from the problem of assessing difficulty of any test. The difficulty of an item is determined by finding out what proportion of Ss taking the test marked it correctly. The difficulty of the entire test is revealed by the mean score. These data may be seen in the test analyses in Appendix C and in TABLE 2 in Appendix F. Difficulty indices assume that the subject matter being tested by various instruments is all equal in difficulty. All attention is on the test and none on the text.

In this study, it quickly became apparent that the difficulty of the text was important. Two tests administered on the same day to the same Ss would produce quite different scores if the difficulty of the texts was disparate. Since the tests were all made by the experimenter, with some skill and experience in test making and analysis, there was some reason to believe that they were roughly equal in difficulty, but this was only a guess.

The Dale-Chall ratings on the texts may be seen in TABLE 2, Appendix F. They ranged from 4.9 to 6.4. All of these were well within the ability of college students. (Other texts with higher ratings and non-narrative style were not used in this analysis.) Although there was no statistical method of determining "equality" of these ratings, these eleven texts were considered, or assumed to be, "equated in difficulty," and these words have been used in the table titles. The dates and scatter of presentation of these texts (and tests) may be seen in the class schedule for the spring quarter in Appendix A.

TABLE 4

Frequencies of Daily Test Scores Plotted as a Function of Temporal Order of Presentation of Daily Text Selections Equated for Difficulty on Dale-Chall Ratings
N = 424; r = .13 ($p < .01$); reg BETA = .15

Daily Test Score	Order of Presentation 1	2	3	4	5	6	7	8	9	10	11
20		1				1		1			
19	2				2	2		2			1
18						2		5			
17	3	1	1		2	5	1	5		2	3
16	5	5	3	4	4	3	1	3	3	5	5
15	1	1	5	2	3	4	4	5	3	3	6
14	7	2	5	7	10	5	3	5	10	5	10
13	7	1	6	4	12	5	4	4	12	6	14 *
12	6	6	1	7	18	1	8	5	10	5	11
11 *	2	3	4	8	12	1	5	2	11	3	
10	3	2	3	2		2	3		13	1	2
9	1	3	5	3	1	2	1		11	1	
8		2	3	2		2	3			3	3
7	3	3	1		1	3	1		2	1	1
6	2	2			1		2	1	1	1	1
5		2	1	1	1	1	1		1		
4		1	1		1					1	
3							1				
2			2								
1		1					1				

*Indicates fitted regression line

TABLE 4 shows the frequencies of the daily test scores plotted as a function of temporal order. This plot was performed by the main program SCATTER at the Ohio University computer center on an IBM 360/44 computer. The regression line has been drawn through time. Improvement was significant at the $p = .01$ level of confidence. This indicates that if the texts were equated for difficulty and if the tests were equal in difficulty, Ss improved as the quarter went on in the listening tasks assigned. It does not support the research hypothesis, since it has nothing to do with the question of cross-over from subskill to another.

An analysis of the variance among the eleven texts and Sheffè Contrast tests may be seen in TABLE 12, Appendix E.

Student ratings

Ss were asked to rate each text and test on difficulty and each text on interestingness. Correlations among these ratings were computed by the main program PRWM01 on an IBM 360/44. Results may be seen in Appendix G.

Two items are of interest in these correlations: (1) Correlations between difficulty of the text and difficulty of the test were high. When data were used only from the difficulty-equated tests, value for r was .58. When the data came from all texts, it was .64. And when only the means were used, thus eliminating most of the variance, value for r was .94. This provides some support for the belief that difficulty of text and tape were confounded. (2) Interestingness of the texts and scores on tests were highly correlated. When the difficulty-equated texts were used, value for r was .38. When all texts were used, r was .47. And when the mean scores for all texts were used, r rose to .72. Since it has been demonstrated that under conditions of high motivation interestingness does not correlate with scores on tests, there is reason for concluding that motivation in the experimental group was not maximal.

CHAPTER IV

CONCLUSIONS

Conclusions

There was little evidence in the data generated in this study that using compressed speech to increase the rate at which a listener can handle aurally input data will improve his performance on other so-called listening subskills. Consequently, the major conclusion of this study was as follows:

(1) Increasing one's ability to handle aurally input data faster will not improve his performance on listening subskills not directly practiced in the training sessions.

This is, of course, a generalization to the entire population from a study done one time on one sample, and it should be read as such. There is little doubt that the Ss in this study did learn to handle data faster. Their daily scores improved, and they expressed feelings of impatience with normal rates of speech. But they did not score better on subskills not used in the training sessions.

Another conclusion of some importance:

(2) Ss improved significantly on subskills used in the training sessions. It is possible that other subskills--e.g., inference making--could be improved in the same way if these items measured the quality of inferences made.

(3) In the college classroom scores on tests are higher when the subject is interesting to the listeners. This is not, of course, great news.

(4) Ss in this study were not maximally motivated. This was evidenced in part by their lesser ability to listen to material that seemed less interesting, as indicated by their own ratings.

Two of the conclusions drawn above have been generalized to the population. This may be fallacious. It is possible that another way of increasing the rate of handling aurally input data would succeed in improving listening subskills. It is possible that the same study done with a highly motivated group of experimental and control Ss would turn out differently. Such motivation might be achieved easily in some small religious college or by rewarding Ss on some sliding scale. The evidence from the laboratory cited in the introduction to this report, and the accomplishments of reading improvement programs should not be rejected on the basis of a single study.

Two peripheral conclusions seem justified:

(5) The taping, compressing, and playback systems in this

study were excellent. Every word was intelligible. Thus the independent variable seemed to be well controlled.

(6) The achievement tests used in this study were remarkably good. They were quite reliable, and almost all items contributed to the aim of the test. The method of construction insured at least text validity. Thus the dependent variable was believed to have been assessed well.

Recommendations

It is possible to suggest that some of these studies be undertaken:

(1) A replication of this study using very difficult texts throughout.

(2) A replication using only inference items on the daily tests, or other kinds of items assessing some other listening subskill.

(3) A replication using highly motivated subjects.

(4) An extensive investigation of the confounding of the difficulty of the texts and the difficulty of the tests. Perhaps a college class in English Literature could read the texts used here and mark the tests. A better, but almost impossible method would be to have several hundred motivated college students listen to the texts at normal reading speed. This would be most difficult because of the effects of practice. No student could be used twice, and the number of subject needed would be astronomical. Without some separation of difficulty of text and difficulty of test, however, daily improvement is difficult to assess.

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APPENDIX A

Course Outlines
for
Three Quarters

Spring Quarter
1972

		Dale-Chall Rating	Running Time	Total Time
Mar 28	Lecture		50 min.	50 min.
30	Brown-Carlsen, From A_m		45 min.	45 min.
Apr 4	Rossiter		45 min.	45 min.
6	Xerox, Test A		20 min.	20 min.
11	To Build a Fire	6.2	31 min	
	Goodby to the Wild Horses	8.4	13 min.	44 min.
13	Top of the World, I	6.2	38 min.	
	The Latest Word in Bibles	7.9	10 min.	48 min.
18	Top of the World, II	6.2	38 min.	
	Pro Football's Demolition Squad	8.4	11 min.	49 min.
20	Home Girl	5.5	42 min.	42 min.
25	Anything can Happen, I	4.9	34 min.	
	Beware...Commercial Faith Healers	3.9	13 min.	47 min.
27	Anything Can Happen, II	5.2	38 min.	
	Speepmen vs Eagles	6.9	9 min.	47 min.
May 2	The First and the Last, I	6.4	41 min.	41 min.
4	The First and the Last, II	6.4	43 min.	43 min.
9	Virgin Birth	5.2	42 min.	42 min.
11	A Piece of News	5.6	13 min.	
	The Story of Tuan	7.3	27 min.	40 min.
16.	On the Beach	6.3	27 min.	
	London's Outdoor Oratory	9.1	17 min.	44 min.
18	Footfalls	6.1	34 min.	
	Rainmaking Comes of Age	9.3	12 min.	46 min.
23	Story of a Farm Girl	6.2	28 min.	
	Don't Look it up-Listen	8.8	18 min.	46 min.
30	That Pig of a Morin	6.3	21 min.	
	The Long Exile	5.7	18 min.	39 min.
Jun 1	Brown-Carlsen, Form B_m		45 min.	45 min.
9	Rossiter			
	Xerox, Test B		45 min.	45 min.

Winter Quarter
1972

		Dale-Chall Rating	Running Time	Total Time
Jan 4	Orientation Lecture			
6	Brown-Carlsen, Form B_m		45 min.	45 min.
11	Rossiter Test		45 min.	45 min.
13	Xerox Posttest		15 min.	
	To Build a Fire	6.2	31 min.	46 min.
18	Anything Can Happen, I	4.9	33 min.	
	The Shark: Splendid Savage	8.4	13 min.	46 min.
20	Anything Can Happen, II	5.2	29 min.	
	Goodbye to the Wild Horses	8.4	13 min.	42 min.
25	The Listening Process	7.7	43 min.	43 min.
27	That Pig of a Morin	6.3	18 min.	
	Useless Beauty	7.7	29 min.	47 min.
Feb 1	Footfalls	6.1	32 min.	
	India's Sacred River	7.9	13 min.	45 min.
3	Listening...Most Overlooked Tool	7.5	24 min.	
	Don't Look It Up--Listen!	8.8	18 min.	42 min.
8	Feedback	8.4	41 min.	41 min.
10	Brown-Carlsen, Form A_m		45 min.	45 min.
15	By-passing	7.5	34 min.	34 min.
17	On the Beach	6.3	26 min.	26 min.
22	Roughing It	7.6	23 min.	
	This Proud Heart	5.8	25 min.	48 min.
24	The Story of Tuan	7.3	28	
	A Piece of News	5.6	14	42 min.
29	Story of a Farm Girl	6.2	30 min.	
	Beware the Faith Healers	7.9	13.5 min.	43.5 min.
Mar 2	The Year They Changed Hearts	7.4	34 min.	
	Wild Horses	8.4	13 min.	47 min.
7	Billy Sunday	8.6	27 min.	
	London's Outdoor Oratory	9.1	16 min.	43 min.
9	Rossiter		45 min.	45 min.
15	Brown-Carlsen, From B_m		45 min.	
	Xerox		15 min.	60 min.

Fall Quarter
1971

		Dale-Chall Rating	Running Time	Total Time
Sep 22	Lecture			
27	Brown-Carlsen Form A_m		45 min.	45 min.
29	Rossiter Test		45 min.	45 min.
Oct 4	Xerox Pretest		15 min.	
	To Build a Fire	7.6	34 min.	49 min.
6	A Piece of News	13.5	14 min.	
	Anything Can Happen, I	4.9	34 min.	48 min.
11	Anything Can Happen, II	5.2	36 min.	36 min.
13	Nonlinguistic Patterns of Communication	8.5	19 min.	
	This Proud Heart	7.3	26 min.	45 min.
18	Footfalls	7.7	34 min.	34 min.
25	That Pig of a Morin	7.9	21 min.	
	Listening: Most Overlooked Tool	8.6	24 min.	45 min.
27	By-Passing	8.9	34 min.	
	The Monkey's Paw	7.8	19 min.	53 min.
Nov 3	Brown-Carlsen, Form B_m		45 min.	45 min.
8	Useless Beauty	9.4	31 min.	
	Roughing It	9.6	22 min.	53 min.
10	Story of a Farm Girl	6.2	32 min.	32 min.
15	Billy Sunday	10.0	22 min.	
	Don't Look It Up - Listen	9.8	18 min.	40 min.
17	London's Outdoor Oratory	10.7	20 min.	
	Sharpening the Meas. Instr.	9.4	21 min.	41 min.
22	Feedback	13.5	42 min.	42 min.
29	Nonlinguistic Patterns of Communication	8.5	19 min.	
	This Proud Heart	7.3	26 min.	45 min.
Dec 1	Brown-Carlsen, Form A_m		45 min.	45 min.
7	Rossiter		45 min.	45 min.
	Xerox Posttest		15 min.	15 min.

APPENDIX B

Sample Daily Tests Used

To Build a Fire
Jack London

1. What was the source of water under a thin layer of ice in such a temperature? (Springs)

2. Why had the man not seen the sun for days? (It was winter; the sun was always below the horizon)

3. The man carried something under his shirt to keep it from freezing. What was it? (His lunch; buscults)

4. What did the dog do while the man was trying to light a new fire? (Sat and watched)

5. Why could he not run to the camp where his friends were and let them thaw him out? (He lacked the endurance)

6. What did he use--instead of paper--to light the fire? (Birchbark)

7. The man was quick and alert in the things of life but not in something else. What? (Their significance)

8. When he first began to freeze his hands, what was he trying to do? (Build a fire)

9. London wrote that the dog, a big native husky, was depressed. What depressed him? (The cold)

10. The oldtimer said that when the weather is colder than 50° below zero, a man should travel with . . . (A partner, another man)

11. What part of the man froze first? (Cheeks)

12. When the dog sat down, what did it do, at least once, with its tail? (Wrapped it around his forefeet)

13. Why did the man try to kill the dog? (To warm his hands inside the dog's body)

14. Something caused his beard to grow rapidly as he went on. What was it? (Tobacco spit)

15. What kind of sled did he have? (No sled at all)

16. What was the physical posture of the man when he died? (Sitting)

17. How cold was it? (75° below zero)

18. What put out his first fire? (Snow falling off a tree)

19. What was his business? (Logging)

20. What first alerted the man to the extreme cold? (His spittle forze in the air)

Top of the World (Chapters 1, 2)
Hans Ruesch

1. How did the Eskimo women soften new skins after they had dried? (By chewing them)

2. What remarkable thing happened to one of the dogs as they were pulling the sled full speed across the ice? (She whelped, gave birth to nine pups)

3. What does the polar bear do in winter? (Same as the summer; hunt)

4. There were several signs of the approaching winter. Which one was seen on an animal Ernenek killed? (White hairs on a fox)

5. When Ernenek and Asiak had to stop and build an igloo for shelter against the blizzard, Asiak's building task was to shovel loose snow against the walls of the igloo as Ernenek built it. What was her shovel made of? (Frozen sealskin)

6. When Ernenek stripped to the waist because it was so hot, he ran along the trail beside his sled. About what was the temperature? (10 or 15 below zero)

7. What tool did the Eskimoes use to kill [or catch] a fish? (A spear)

8. What is a good way for an Eskimo to mortify and humiliate another man? (Give him something)

9. What is the Man's biggest hunting prize in this far north land? (The polar bear)

10. When Ernenek and Asiak were chasing Kidok and Imina, Asiak told Ernenek he would be a laughing stock for years and years. Why? (For chasing a woman)

11. When Ernenek and Asiak were chasing Kidok and Imina, how would you describe Asiak's attitude toward Ernenek? (She needled him, belittled him, was smart-alecky)

12. Whan a big blizzard arose, Ernenek tried to punish the wind in two ways. Name one of them? (Whipped it, stuck it with his knife)

13. After Kidok and Imina had left, Ernenek began to make advances to Asiak. What did she do? (Hit him over the head with a frozen salmon)

14. How do the Eskimoes keep their dogs from killing and eating each other? (They break off the dog's teeth)

15. In a land where there were no laws nor judges nor chiefs, what was the only penalty for serious wrongdoing? (Expulsion from the community)

16. As soon as Ernenek and Anarvik had killed the bear, one of them drank some of its blood. The other ate something. What did he eat? (Its brains)

17. When they finally got the bear into the igloo, they gorged themselves on the tender innards. The tougher muscle was thrown onto a pile of meat. What must happen to it before they eat it? (It must rot and mellow)

18. During the chase after Kidok and Imina, the heat wave passed and the air became breathable again. How cold was it after this happened? (30 or 40 below zero)

19. Ernenek killed a fox and Asiak prepared it - that is, she cleaned or butchered it. What did she plan to do with the hide? (Use it for a mop)

20. Why are the feet of the sled dogs not cut by the sharp ice edges? (They wear little shoes)

Top of the World (Chapters 8, 9)
Hans Ruesch

1. An Eskimo woman is not supposed to sew for a long time after the death of a loved one. Why not? (Using a pointed instrument may injure the ghost)

2. How can the Eskimoes tell that ice is thick enough to carry the weight of men and sleds? (It turns white)

3. Ernenek could tell from the footprints of the bear that it was hungry. How could he make this inference? (The toes pointed inward, indicating that the bear was poor)

4. In the big house where everyone was gathered for a feast, Erneneck violated a strong social custom. What did he do? (He bragged)

5. What effect did the so-called funeral sermon have on the Eskimoes? (None. They didn't understand it)

6. When Ernenek and his family stopped their sled in the Village, the local Eskimoes took something from his sled. What did they take? (Bear hams)

7. The Eskimoes wanted to take along on the trip with explorers something which the explorers did not want to take. What was it? (Women)

8. Why did the white men come to the Village - that is, what was their purpose? (Exploration)

9. Who, besides the old medicine man, made a little speech, that is, preached the funeral sermon, at Ernenek's funeral? (A white preacher; colorless hair; Kohartok)

10. Through which of its senses (sight, hearing, smell) did the male bear locate Ernenek? (Hearing, Ernenek coughed)

11. Why did Ernenek not have the white doctor operate on his back? (The doctor refused, said there was nothing he could do)

12. One Eskimo woman, Torngek, had two husbands. Why? (They were poor hunters)

13. In the Village Ernenek and his family tasted a new kind of food for the first time. What was it? (Boiled or cooked meat)

14. Asiak did not die alone. How could this be? (She had a puppy in her arms when she drowned)

15. What was the cause of Asiak's death? (Drowning; suicide)

16. Ernenek's family was represented on the exploring trip. How? (Papik, his son, went along)

17. Old Siorakidsok, the angakok, planned Ernenek's funeral. What was his main purpose in planning it? (To protect them from his spirit)

18. Why is a woman necessary to an Eskimo? (Because of the work she can do on the trail and in the igloo)

19. Ernenek could probably have killed the male bear too had he been able to do one last thing. What? (Get his knife out)

20. What was Ernenek's sled made of? (Meat and bones)

The First and the Last, I
John Galsworthy

1. How did Larry kill Walenn? (Strangled him)

2. It was Keith's opinion that Larry's ruin had been caused by one thing. What was it? (Women; not drink)

3. Wanda showed Keith Tarrant some evidence that she would not give Larry away to the police. What was it? (She had burned everything he had given her or left there)

4. Twice before in his life Larry had felt like killing a man. Once when he wanted to kill Keith for sneering at him. Who was the other? (A man flogging a horse)

5. How did Keith Tarrant get into the girl's room the first time? (He had Larry's key)

6. Keith visited Wanda in her room late at night. Where did he go the next morning? (To Larry's room)

7. Why was Wanda so confident that no one had seen Larry carry the body down the street? (She was watching)

8. During his first questioning of Larry, Keith asked him for something which Larry gave to him. What did Keigh ask for? (The key to the girl's room)

9. Galsworthy wrote that Keith Tarrant had two reasons for helping Larry. One he called "blood-loyalty." What was the other? (Self preservation)

10. How many children had Wanda borne? (Two)

11. What was Keith Tarrant doing when his brother, Larry, came into his study that first night? (Sleeping)

12. In Keith Tarrant's opinion there were two mitigating circumstances in the murder. Name one of them. (Larry had not meant to kill; the murdered man attacked Larry)

13. The little scarecrow of a bum Larry met on the street had once been a professional man. What was the profession? (A minister of religion)

14. How long was it after Larry told Keith about the murder until Keith read in the paper that the police had made an arrest? (The following morning)

15. When Keith Tarrant went to look at the archway and when he walked the streets in Soho, he was the same man several times. Who was it? (A policeman)

16. Galsworthy wrote that Keith involved himself with the murder the instant he commanded Larry to do something. What did he tell him to do? (Burn an envelope)

17. Who knocked on the door when Keith was visiting Wanda? (The policeman)

18. On his way home from Keith's, Larry met a scarecrow of a man in the street who said, or implied, that one thing would cause a man to lose his self respect very quickly. What did he say it was? (Starvation)

19. Keith Tarrant thought this: "They are all the same, unstable as water, emotional, shiftless-pests of society." Whom was he thinking of? (Women)

20. When Larry came into Keith's study to tell him of the murder, Keith gave him something to drink. What was it? (Coffee)

The First and the Last, II
John Galsworthy

1. What was Larry doing the last time we saw him alive in the story? (Writing the letter)

2. Keith's main argument to Larry that he should clear out and leave John Evan to the courts was destroyed in a surprising way. What destroyed it? (Evans was convicted)

3. What else did John Evan, the accused murderer, take off the body besides the ring? (Nothing)

4. The last time Keith saw Larry and Wanda alive Larry knowingly told Keith a lie. What was it? (That he would do nothing...)

5. The night Wanda and Larry committed suicide Keith did something he was blaming Larry for. What was it? (He drank champagne)

6. Why did Larry not leap at the chance to get out of the country and live with Wanda? (Because an innocent man might be hanged)

7. Where was Keith going to send Larry? (Argentina)

8. Larry signaled his intention to committ suicide to Wanda by something he did the night before. What was it? (Arranged a feast)

9. When Larry left the pretrial hearing of John Evan, he had only one fear. What was it? (Of himself, of giving himself up)

10. At the very end of the story Keith looked out the window and thought for an instant he had seen something strange and terrifying. What was it? (A gibbet, a body hanging)

11. A single action by Keith made a mockery of the death of Larry and Wanda. What was the action? (He burnt the letter)

12. Keith was glad the police had arrested the wrong man because it gave them something. What? (Time)

13. Where did Larry live between the two times Keith visited him and the trial of John Evan? (With Wanda)

14. After the pretrial hearing, Larry felt like getting drunk. Where did he go instead? (To Wanda's room)

15. When Keith went to Wanda's room on Christmas Eve and peered into the window, what did he see? (Wanda doing devotions, kneeling before four candles)

16. What was Larry doing when Keith visited him in his room the first time? (Lying in bed, smoking, staring at the ceiling)

17. At one time in the story Wanda saw a vision. What did she see? (The Virgin Mary)

18. During the six weeks before Evan's trial, Larry would walk for hours in the slums of Eastern London. Why did he walk through the slums? (The troubles he saw made his seem smaller)

19. When Keith was in the courtroom he must have looked quite different from what he did at home. Why? (He wore a wig and gown)

20. At about what hour of the day did Keith discover the bodies? (About midnight)

Anything Can Happen (Chapters 1, 2)
Papashvily

1. How did Papashvily try to make himself a citizen? (By tearing up his passport, visa, and landing cards)

2. Was he convicted? (No)

3. Who was the man with the bad manners who, in Papashvily's opinion, could never learn any? (Mr. Black, the manager of the struck factory)

4. Where did he fall asleep during his first night? (In the park; in Central Park)

5. What action of his finally started the car? (He kicked the radiator)

6. How did Papashvily get food to eat on the ship? (Bought it from the steward, or bribed him)

7. How did he get his first dollar? (He sold his cap)

8. "It lasted very short." What? (Bologna; boiogna sandwiches)

9. His first job was washing dishes. What was his second job? (Garage mechanic)

10. When he took a very good job in a factory as a repairman, it was under circumstances he did not understand. When he found out, he quit. What were the circumstances? (He was a strikebreaker, a scab)

11. How many languages to your knowledge could Papashvily write? (At least 4; Turkish, Russian, Persian, Georgian)

12. What was Papashvily's skill in the old country? (He was a worker in decorative leathers) (He was also a swordmaker)

13. "The twelfth rang once on the pan edge and was silent." What was it? (A wine glass)

14. What was his final contact with the judge in the courtroom? (They shook hands)

15. What happened to the first dollar he got in this country? (He rented "landing money".)

16. What was the first kind of transportation Papashvily used in New York? (The subway, a train)

17. When he got fired from his dishwashing job, the woman who owned the restaurant gave him a nickel. It was the only money he had. What did he do with it? (Bought peanuts to feed the squirrels)

18. Before he had been in America six months, he had been arrested for something he didn't do. What was it? (Picking flowers, dogwood blossoms; tearing down a dogwood tree)

19. Who beat Papashvily up. (The strikers)

20. What near catastrophe arose from the fact that Papashvily arrived in America as a steerage passenger? (He spent his "landing money" for food)

Anything Can Happen (Chapters 3, 4, 5)
Papashvily

1. What was it that grew in his arms as he rode on the trolley? (Dough)

2. Before they decided to go to California, they almost decided to go to a place where they could speak Russian. Where was it? (Alaska)

3. What was his second investment? (Two lots in Pontiac)

4. After his first investment turned out badly, he chose his second for a reason which he told us. What was the reason? (Property, or land, doesn't die or get sick)

5. When Papashvily went to Fort Wayne to find "Uncle John" he had only one idea of how to find him. What was it? (Lood for a cook)

6. An old man told Papashvily, "Today I heard the sound of home for the first time in thirty years." What did he hear? (Papashvily speaking Georgian)

7. During the depression Papashvily started another business of his own which he had to abandon for the California trip. What was it? (A junk business)

8. "They were writing books and speaking many languages..." and Papashvily expected one of them to speak Georgian; but they could not. Who were they? (Professors at the University)

9. He spent a great deal of money and time trying to find something. What? (Someone who could speak his native tongue, Georgian)

10. What did he buy as his first "practical investment" in this country in order to devleop an income in addition to his wages? (Two silver foxes)

11. Why did he quit his job in an automobile factory in Detroit in 1932? (So a married man with a family could keep his own job a little longer)

12. One of Papashvily's friends said that in America people "fool themselves they're eating." How? (By chewing gum)

13. In what kind of place did Papashvily finally find a man who spoke his native language (Georgian)? (In a laundry)

14. When he went to Detroit to work in an automobile factory, what company did he work for first? (Studebaker)

15. What did Papashvily like about his fellows - that is, Americans in the Packard plant in Detroit? (They laughed all the time, especially at themselves)

16. What was His Excellency's theory about the roads used by experienced travelers? (They always used the backroads)

17. What business venture caused Papashvily to decide that he was not cut out to be a business man? (Catering)

18. Who was Mr. Fox? (A fox; his male fox)

19. When Papashvily finally found Uncle John in Fort Wayne, he told everyone in the restaurant that had it not been for Uncle John he would probably now be something else. What? (A dog - barking at the moon)

20. What was wrong with his second investment? (The lots were under water in a swamp)

APPENDIX C

Item Analyses of Daily Tests

Top of the World, 1

N = 36 σ = 4.2 K-R20 = .81
M = 10.8 R = 1-20

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	16-2	11-7	.51	.69	27	9	.75
2	11-7	4-14	.57	.73	15	21	.42
3	13-5	12-6	.17	.22	25	11	.69
4	17-1	5-13	.74	.94	22	14	.61
5	5-13	1-17	.46	.69	6	30	.17
6	6-12	4-14	.16	.22	10	26	.28
7	17-1	18-0	-.05	-.13	35	1	.97
8	12-6	6-12	.54	.67	18	18	.50
9	18-0	12-6	.55	.81	30	6	.83
10	14-4	8-10	.52	.66	22	14	.61
11	11-7	3-15	.48	.62	14	22	.39
12	17-1	4-14	.68	.86	21	15	.58
13	14-4	8-10	.41	.52	22	14	.61
14	9-9	3-15	.48	.63	12	24	.33
15	13-5	5-13	.53	.67	18	18	.50
16	17-1	12-6	.46	.66	29	7	.81
17	9-9	2-16	.52	.68	11	25	.31
18	13-5	5-13	.40	.50	18	18	.50
19	6-12	0-18	.43	.64	6	30	.17
20	18-0	10-8	.59	.83	28	8	.78

Top of the World, II

N = 41 σ = 3.7 K-R20 = .76
M = 11.3 R = 2-17

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	17-4	11-9	.36	.48	28	13	.68
2	7-14	1-19	.37	.53	8	33	.20
3	17-4	7-13	.53	.67	24	17	.59
4	12-9	3-17	.44	.57	15	26	.37
5	7-14	7-13	.07	.09	14	27	.34
6	10-11	4-16	.37	.50	14	27	.34
7	21-0	14-6	.57	.87	35	6	.85
8	14-7	8-12	.38	.47	22	19	.54
9	18-3	13-7	.38	.52	31	10	.76
10	19-2	8-12	.64	.82	27	14	.66
11	16-5	2-18	.67	.84	18	23	.44
12	1-20	0-20	.07	.21	1	40	.02
13	18-3	9-11	.59	.77	27	14	.66
14	19-2	8-12	.59	.77	27	14	.66
15	19-2	10-10	.59	.79	29	12	.71
16	12-9	6-14	.36	.46	18	23	.44
17	21-0	10-10	.71	.97	31	10	.76
18	21-0	19-1	.09	.27	40	1	.98
19	10-11	9-11	.15	.19	19	22	.46
20	21-0	14-6	.35	.53	35	6	.85

To Build a Fire

N = 42 σ = 3.2 K-R20 = .71
M = 12.8 R = 6-19

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	20-1	12-9	.44	.60	32	10	.76
2	15-6	6-15	.61	.77	21	21	.50
3	21-0	20-1	.04	.12	41	1	.98
4	20-1	18-3	.39	.67	38	4	.90
5	10-11	6-15	.42	.54	16	26	.38
6	17-4	14-7	.36	.48	31	11	.74
7	8-13	4-17	.41	.54	12	30	.29
8	8-13	2-19	.34	.47	10	32	.24
9	14-7	8-13	.34	.42	22	20	.52
10	20-1	21-0	-.06	-.16	41	1	.98
11	7-14	6-15	.29	.38	13	29	.31
12	20-1	9-12	.38	.49	29	13	.69
13	21-0	17-4	.54	.93	38	4	.90
14	21-0	15-6	.55	.85	36	6	.86
15	20-1	15-6	.45	.67	35	7	.83
16	17-4	6-15	.50	.63	23	19	.55
17	20-1	14-7	.54	.77	34	8	.81
18	19-2	15-6	.11	.15	34	8	.81
19	11-10	4-17	.49	.62	15	27	.36
20	12-9	6-15	.42	.53	18	24	.43

The Story of Tuan

N = 37 | σ = 3.214 | K-R20 = .72
M = 9.3 | R = 1-16

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	16-3	12-6	.27	.37	28	9	.76
2	17-2	15-3	.34	.52	32	5	.86
3	19-0	16-2	.36	.76	35	2	.95
4	12-7	3-15	.60	.76	15	22	.41
5	5-14	1-17	.32	.48	6	31	.16
6	14-5	2-16	.61	.77	16	21	.43
7	2-17	0-18	.13	.26	2	35	.05
8	14-5	6-12	.48	.60	20	17	.54
9	5-14	3-15	.27	.38	8	29	.22
10	8-11	1-17	.39	.54	9	28	.24
11	19-0	15-3	.52	.96	34	3	.92
12	19-0	15-3	.43	.79	34	3	.92
13	0-19	0-18	.00	.00	0	37	.00
14	15-4	10-8	.47	.61	25	12	.68
15	11-8	5-13	.40	.51	16	21	.43
16	8-11	1-17	.49	.67	9	28	.24
17	15-4	6-12	.51	.65	21	16	.57
18	3-16	3-15	.00	.00	6	31	.16
19	15-4	3-15	.58	.72	18	19	.49
20	9-10	2-16	.45	.59	11	26	.30

A Piece of News

N = 37 σ = 2.708 K-R 20 = .64
M = 12.3 R = 5-16

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	5-14	3-15	.24	.33	8	29	.22
2	10-9	4-14	.35	.45	14	23	.38
3	14-5	9-9	.47	.60	23	14	.62
4	18-1	14-4	.48	.75	32	5	.86
5	4-15	2-16	.17	.26	6	31	.16
6	19-0	11-7	.61	.88	30	7	.81
7	3-16	1-17	.29	.48	4	33	.11
8	10-9	1-17	.48	.64	11	26	.30
9	4-15	3-15	.08	.11	7	30	.19
10	13-6	8-10	.31	.39	21	16	.57
11	19-0	15-3	.29	.52	34	3	.92
12	19-0	14-4	.61	1.02	33	4	.89
13	19-0	10-8	.66	.92	19	8	.51
14	18-1	13-5	.37	.55	31	6	.84
15	5-14	3-15	.19	.27	8	29	.22
16	19-0	16-2	.55	1.17	35	2	.95
17	18-1	12-6	.38	.55	30	7	.81
18	19-0	18-0	.00	.00	37	0	1.00
19	17-2	9-9	.48	.63	26	11	.70
20	18-1	17-1	.02	.05	35	2	.95

The First and the Last, I

N = 39 σ = 3.46 K-R20 = .73
M = 11.05 R = 1-17

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	20-0	18-1	.38	1.05	38	1	.97
2	7-13	4-15	.32	.43	11	28	.28
3	10-10	4-15	.37	.48	14	25	.36
4	12-8	3-16	.52	.66	15	24	.38
5	20-0	13-6	.68	1.03	33	6	.85
6	13-7	8-11	.40	.50	21	18	.54
7	19-1	7-12	.67	.87	26	13	.67
8	11-9	6-13	.23	.28	17	22	.44
9	9-11	3-16	.29	.39	12	27	.31
10	18-2	13-6	.32	.45	31	8	.79
11	15-5	7-12	.37	.47	22	17	.56
12	4-16	1-18	.19	.31	5	34	.13
13	17-3	9-10	.62	.81	26	13	.67
14	14-6	10-9	.48	.62	24	15	.62
15	20-0	16-3	.53	.99	36	3	.92
16	4-16	1-18	.28	.45	5	34	.13
17	20-0	15-4	.59	1.00	35	4	.90
18	8-12	1-18	.38	.52	9	30	.23
19	13-7	11-8	.32	.40	24	15	.62
20	17-3	10-9	.39	.52	27	12	.69

The First and the Last, II

N = 40 σ = 3.12 K-R20 = .66
M = 10.8 R = 2-17

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	8-12	4-16	.46	.61	12	28	.30
2	13-7	1-19	.67	.86	14	26	.35
3	9-11	5-15	.27	.34	14	26	.35
4	15-5	10-10	.28	.36	25	15	.63
5	10-10	5-15	.26	.34	15	25	.38
6	13-7	11-9	.21	.26	24	16	.60
7	20-6	14-6	.31	.47	34	6	.85
8	2-18	2-18	.13	.22	4	36	.10
9	2-18	0-20	.09	.19	2	38	.05
10	20-0	13-7	.54	.79	33	7	.83
11	15-5	16-4	.18	.25	31	9	.78
12	16-4	16-4	.33	.47	32	8	.80
13	19-1	16-4	.32	.50	35	5	.88
14	16-4	14-6	.35	.48	30	10	.75
15	19-1	14-6	.37	.54	33	7	.83
16	15-5	8-12	.33	.42	23	17	.58
17	15-5	10-10	.48	.61	25	15	.63
18	16-4	5-15	.56	.71	21	19	.53
19	7-13	1-19	.63	.90	8	32	.20
20	14-6	3-17	.39	.50	17	23	.43

Anything Can Happen, I

N = 38 M = 13.05 S = 3.340 R = 4-19 K-R20 = .75

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	13-6	5-14	.49	.61	18	20	.47
2	19-0	19-0	.00	.00	38	0	1.00
3	12-7	5-14	.41	.52	17	21	.45
4	18-1	15-4	.24	.38	33	5	.87
5	17-2	13-6	.47	.66	30	8	.79
6	12-7	2-17	.48	.61	14	24	.37
7	17-2	11-8	.49	.66	28	10	.74
8	2-17	0-19	.31	.67	2	36	.05
9	16-3	12-7	.42	.57	28	10	.74
10	18-1	14-5	.37	.56	32	6	.84
11	14-5	10-9	.34	.43	24	14	.63
12	13-6	9-10	.44	.56	22	16	.58
13	8-11	2-17	.46	.62	10	28	.26
14	18-1	15-4	.57	.89	33	5	.87
15	13-6	8-11	.47	.60	21	17	.55
16	19-0	15-4	.52	.87	34	4	.89
17	16-3	8-11	.47	.60	24	14	.63
18	19-0	19-0	.00	.00	38	0	1.00
19	19-0	16-3	.50	.93	35	3	.92
20	10-9	5-14	.50	.64	15	13	.39

Anything Can Happen, II

N = 39 σ = 3.815 K-R20 = .79
M = 13.46 R = 5-20

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	20-0	18-1	.02	.06	38	1	.97
2	20-0	16-3	.49	.91	36	3	.92
3	20-0	14-5	.47	.74	34	5	.87
4	15-5	4-15	.57	.71	19	20	.49
5	18-2	12-7	.37	.51	30	9	.77
6	16-4	11-8	.40	.53	27	12	.69
7	20-0	16-3	.51	.96	36	3	.92
8	20-0	13-6	.59	.90	33	6	.85
9	11-9	3-16	.32	.41	14	25	.36
10	16-4	8-11	.47	.60	24	15	.62
11	14-6	6-13	.58	.72	20	19	.51
12	16-4	6-13	.50	.63	22	17	.56
13	12-8	4-15	.53	.67	16	23	.41
14	11-9	6-13	.35	.45	17	22	.44
15	10-10	5-14	.50	.64	15	24	.38
16	16-4	7-12	.44	.56	23	16	.59
17	18-2	10-9	.46	.62	28	11	.72
18	19-1	16-3	.24	.41	35	4	.90
19	19-1	13-6	.56	.82	32	7	.82
20	18-2	8-11	.51	.67	26	13	.67

The Virgin Birth

N = 38 M = 14.87 σ = 2.84 R = 6-20 K-R20 = .67

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	19-0	19-0	.00	.00	38	0	1.00
2	13-6	4-15	.53	.66	17	21	.45
3	18-1	15-4	.26	.40	33	5	.87
4	13-6	9-10	.30	.38	22	16	.58
5	18-1	18-1	-.01	-.02	36	2	.95
6	19-0	19-0	.00	.00	38	0	1.00
7	15-4	11-8	.43	.56	26	12	.68
8	17-2	14-5	.34	.49	31	7	.82
9	19-0	16-3	.50	.93	35	3	.92
10	19-0	19-0	.00	.00	38	0	1.00
11	14-5	2-17	.68	.86	16	22	.42
12	17-2	15-4	.28	.43	32	6	.84
13	11-8	4-15	.49	.63	15	23	.39
14	19-0	18-1	.11	.30	37	1	.97
15	18-1	13-6	.46	.66	31	7	.82
16	10-9	3-16	.46	.60	13	25	.34
17	15-4	10-9	.34	.44	25	13	.66
18	16-3	6-13	.56	.71	22	16	.58
19	19-0	10-9	.63	.86	29	9	.76
20	17-2	14-5	.22	.31	31	7	.82

Latest Word in Bibles

N = 36 σ = 3.0 K-R2- = .65
M = 5.9 R = 1-14

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	10-8	4-14	.34	.43	14	22	.39
2	8-10	2-16	.52	.70	10	26	.28
3	9-9	2-16	.45	.59	11	25	.31
4	3-15	1-17	.12	.20	4	32	.11
5	4-14	1-17	.19	.30	5	31	.14
6	7-11	2-16	.22	.30	9	27	.25
7	14-4	5-13	.61	.76	19	17	.53
8	12-6	5-13	.39	.48	17	19	.47
9	9-9	3-15	.46	.59	12	24	.33
10	3-15	1-17	.18	.30	4	32	.11
11	2-16	0-18	.45	.93	2	34	.06
12	13-5	5-13	.55	.69	18	18	.50
13	5-13	2-16	.38	.54	7	29	.19
14	9-9	7-11	.20	.25	16	20	.44
15	6-12	3-15	.29	.39	9	27	.25
16	0-18	0-18	.00	.00	0	36	.00
17	18-0	10-8	.54	.75	28	8	.78
18	9-9	1-17	.54	.73	10	26	.28
19	9-9	7-11	.29	.37	16	20	.44
20	3-15	0-18	.30	.55	3	33	.83

Home Girl

N = 40 σ = 2.437 K-R20 = .55
M = 12.10 R = 5-16

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	17-3	16-4	.26	.38	33	7	.83
2	19-1	17-3	.15	.26	36	4	.90
3	17-3	7-13	.56	.71	24	16	.60
4	20-0	16-4	.49	.84	36	4	.90
5	16-4	7-13	.39	.49	23	17	.58
6	17-3	9-11	.35	.46	26	14	.65
7	15-5	12-8	.40	.52	27	13	.68
8	13-7	5-15	.44	.55	18	22	.45
9	20-0	20-0	.00	.00	40	0	1.00
10	20-0	20-0	.00	.00	40	0	1.00
11	2-18	1-19	.22	.42	3	37	.08
12	12-8	6-14	.44	.55	18	22	.45
13	19-1	18-2	.01	.02	37	3	.93
14	4-16	2-18	.16	.24	6	34	.15
15	18-2	11-9	.60	.80	29	11	.73
16	1-19	0-20	.13	.35	1	39	.03
17	18-2	9-11	.55	.72	27	13	.68
18	3-17	1-19	.19	.33	4	36	.10
19	20-0	19-1	.47	1.31	39	1	.98
20	9-11	8-12	.19	.24	17	23	.43

Pro Football's Demolition Squad

N = 41 σ = 3.73 K-R20 = .76
M = 10.78 R = 1-18

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	6-15	1-19	.36	.53	7	34	.17
2	12-9	9-11	.17	.21	21	20	.51
3	20-1	13-7	.47	.70	33	8	.80
4	18-3	14-6	.43	.60	32	9	.78
5	17-4	8-12	.46	.59	25	16	.61
6	20-1	16-4	.36	.58	36	5	.88
7	5-16	1-19	.41	.63	6	35	.15
8	12-9	2-18	.51	.67	14	27	.34
9	21-0	12-8	.61	.88	33	8	.80
10	18-3	9-11	.58	.75	27	14	.66
11	4-17	4-16	.03	.04	8	33	.20
12	19-2	5-15	.71	.90	24	17	.59
13	20-1	15-5	.42	.64	35	6	.85
14	16-5	9-11	.45	.57	25	16	.61
15	13-8	6-14	.42	.53	19	22	.46
16	14-7	8-12	.46	.57	22	19	.54
17	7-14	0-20	.50	.73	7	34	.17
18	12-9	5-15	.37	.47	17	24	.41
19	18-3	10-10	.26	.33	28	13	.68
20	16-5	7-13	.51	.65	23	18	.56

On The Beach

N = 37 | σ = 3.141 | KR 20 = .71
M = 12.43 | R = 4-17

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	17-2	5-13	.64	.81	22	15	.59
2	19-0	15-3	.61	1.11	34	3	.92
3	5-14	2-16	.37	.54	7	30	.19
4	5-14	4-14	.10	.14	9	28	.24
5	8-11	4-14	.22	.28	12	25	.32
6	7-12	1-17	.43	.60	8	29	.22
7	15-4	12-6	.14	.19	27	10	.73
8	19-0	16-2	.49	1.03	35	2	.95
9	11-8	7-11	.38	.48	18	19	.49
10	19-0	17-1	.34	.93	36	1	.97
11	15-4	12-6	.24	.32	27	10	.73
12	16-3	7-11	.46	.59	23	14	.62
13	19-0	17-1	.45	1.22	36	1	.97
14	19-0	13-5	.41	.64	32	5	.86
15	17-2	13-5	.44	.63	30	7	.81
16	6-13	0-18	.38	.57	6	31	.16
17	19-0	11-7	.64	.92	30	7	.81
18	18-1	13-5	.50	.75	31	6	.84
19	15-4	8-10	.50	.64	23	14	.62
20	12-7	2-16	.50	.63	14	23	.38

Footfalls

N = 37
M = 13.54

σ = 2.992
R = 6-19

KR 20 = .71

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	15-4	11-7	.41	.55	26	11	.30
2	19-0	17-1	.31	.84	36	1	.97
3	9-10	5-13	.12	.15	14	23	.38
4	3-16	0-18	.31	.57	3	34	.
5	18-1	10-8	.50	.69	28	9	.76
6	8-11	4-14	.36	.47	12	25	.32
7	19-0	17-1	.03	.08	36	1	.97
8	18-1	12-6	.34	.49	30	7	.81
9	18-1	16-2	.19	.34	34	3	.92
10	19-0	13-5	.57	.90	32	5	.86
11	19-0	16-2	.20	.43	35	2	.95
12	18-1	12-6	.53	.76	30	7	.81
13	18-1	9-9	.74	.99	27	10	.73
14	18-1	15-3	.33	.54	33	4	.89
15	16-3	7-11	.57	.73	23	14	.62
16	17-2	14-4	.45	.67	31	6	.84
17	17-2	8-10	.59	.77	25	12	.68
18	2-17	0-18	.20	.42	2	35	.05
19	12-7	9-9	.32	.41	21	16	.57
20	13-6	10-8	.50	.63	13	14	.35

London's Outdoor Oratory

N = 37
M = 11.54

σ = 3.167
R = 5-18

KR 20 = .64

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	13-6	7-11	.23	.28	20	17	.54
2	18-1	14-4	.29	.46	32	5	.86
3	14-5	4-14	.57	.71	18	19	.49
4	18-1	6-12	.52	.67	24	13	.65
5	13-6	6-12	.37	.46	19	18	.51
6	12-7	6-12	.43	.54	18	19	.49
7	11-8	6-12	.20	.25	17	20	.46
8	14-5	6-12	.28	.35	20	17	.54
9	17-2	15-3	.27	.42	32	5	.86
10	1-18	0-18	.02	.07	1	36	.03
11	17-2	12-6	.48	.68	19	8	.51
12	13-6	3-15	.70	.88	16	21	.43
13	16-3	10-8	.48	.64	26	11	.70
14	17-2	12-6	.38	.53	29	8	.78
15	11-8	5-13	.42	.53	16	21	.43
16	6-13	6-12	.19	.25	12	25	.32
17	17-2	14-4	.26	.39	31	6	.84
18	8-11	5-13	.20	.25	13	24	.35
19	15-4	7-11	.56	.71	22	15	.59
20	15-4	17-1	.02	.03	32	5	.86

Rainmaking Comes of Age

N = 37
M = 7.6

$\bar{R}$ = 3.744
R = 1-16

KR 20 = .77

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	8-11	3-15	.29	.38	11	26	.30
2	16-3	12-6	.33	.45	28	9	.76
3	1-18	0-18	.37	1.02	1	36	.03
4	14-5	4-14	.50	.63	18	19	.49
5	5-14	3-15	.25	.34	8	29	.22
6	2-17	0-18	.28	.59	2	35	.05
7	10-9	5-13	.30	.39	15	22	.41
8	18-1	11-7	.39	.54	29	8	.78
9	7-12	3-15	.32	.43	10	27	.27
10	14-5	1-17	.69	.87	15	22	.41
11	9-10	4-14	.41	.53	13	24	.35
12	18-1	13-5	.54	.81	31	6	.84
13	7-12	2-16	.44	.61	9	28	.24
14	8-11	2-16	.55	.74	10	27	.27
15	5-14	3-15	.37	.52	8	29	.22
16	10-9	1-17	.43	.57	11	26	.30
17	9-10	0-18	.46	.63	9	28	.24
18	14-5	2-16	.67	.85	16	21	.43
19	12-7	2-16	.70	.90	14	23	.38
20	15-4	9-9	.33	.43	24	13	.65

Don't Look It Up--Listen

N = 40
M = 8.35
σ = 3.328
R = 2-16
KR 20 = .69

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	9-11	2-18	.51	.68	11	29	.28
2	4-16	1-19	.39	.63	5	35	.13
3	12-8	5-15	.37	.46	17	23	.43
4	8-12	7-13	.26	.33	15	25	.38
5	19-1	9-11	.54	.72	28	12	.70
6	7-13	2-18	.25	.35	9	31	.23
7	16-4	4-16	.62	.77	20	20	.50
8	2-18	0-20	.29	.62	2	38	.05
9	10-10	6-14	.39	.49	16	24	.40
10	20-0	16-4	.41	.70	36	4	.90
11	4-16	3-17	.09	.13	7	33	.18
12	17-3	7-13	.45	.38	24	16	.60
13	10-10	7-13	.34	.42	17	23	.43
14	16-4	10-10	.31	.40	26	14	.65
15	1-19	0-20	.22	.63	1	39	.03
16	11-9	2-18	.63	.83	13	27	.33
17	15-5	7-13	.46	.57	22	18	.55
18	12-8	4-16	.53	.67	16	24	.40
19	15-5	12-8	.25	.33	27	13	.68
20	14-6	8-12	.25	.31	22	18	.55

Goodby to the Wild Horses

N = 41 σ = 2.9 K-R20 = .59
M = 7.1 R = 0-14

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	2-19	5-15	-.10	-.15	7	34	.17
2	5-16	0-20	.57	.92	5	36	.12
3	9-12	5-15	.29	.38	14	27	.34
4	3-18	1-19	.16	.27	4	37	.10
5	10-11	2-18	.45	.60	12	29	.29
6	9-12	0-20	.55	.76	9	32	.22
7	19-2	14-6	.42	.59	33	8	.80
8	17-4	12-8	.37	.49	29	12	.71
9	12-9	6-14	.26	.32	18	23	.44
10	11-10	4-16	.44	.57	15	26	.37
11	18-3	9-11	.49	.64	27	14	.66
12	4-17	4-16	.11	.16	8	33	.20
13	10-11	1-19	.43	.58	11	30	.27
14	11-10	8-12	.10	.13	19	22	.46
15	13-8	4-16	.56	.71	17	24	.41
16	9-12	2-18	.37	.50	11	30	.27
17	16-5	10-10	.27	.34	26	15	.63
18	10-11	5-15	.41	.52	15	26	.37
19	6-15	3-17	.45	.62	9	32	.22
20	1-20	1-19	.07	.15	2	39	.05

THIS PROUD HEART

N = 42 σ = 3.6 K-R20 = .82
M = 14.8 R = 6-19

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1.	4-17	1-20	.28	.46	5	37	.12
2.	21-0	18-3	.58	1.1	39	3	.93
3.	20-1	10-11	.63	.84	30	12	.71
4.	21-0	18-3	.48	.91	39	3	.93
5.	20-1	10-11	.54	.72	30	12	.71
6.	21-0	9-12	.72	.96	30	12	.71
7.	16-5	7-14	.44	.55	23	19	.55
8.	20-1	18-3	.42	.72	38	4	.90
9.	19-2	14-7	.51	.72	33	9	.78
10.	11-10	0-21	.51	.69	11	31	.26
11.	20-1	14-7	.42	.60	34	8	.81
12.	20-1	9-12	.69	.90	29	13	.69
13.	21-0	19-2	.21	.46	40	2	.95
14.	21-0	20-1	.39	1.10	41	1	.98
15.	20-1	13-8	.48	.67	33	9	.78
16.	21-0	20-1	.30	.86	41	1	.98
17.	21-0	21-0	. 0	. 0	42	0	1.00
18.	20-1	9-12	.73	.96	29	13	.69
19.	14-7	7-14	.50	.62	21	21	.50
20.	20-1	15-6	.44	.66	35	7	.83

Beware The Commercialized Faith Healers

N = 42 $\bar{X}$ = 2.7 K-R20 = .61
M = 8.6 R = 3-14

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1.	20-1	13-8	.32	.45	33	9	.78
2.	6-15	1-20	.42	.63	7	35	.17
3.	11-10	5-16	.46	.59	16	26	.38
4.	21-0	12-9	.47	.66	33	9	.78
5.	6-15	3-18	.25	.35	9	33	.21
6.	4-17	1-20	.44	.71	5	37	.12
7.	2-19	3-18	.09	.14	5	37	.12
8.	14-7	12-9	.13	.16	26	16	.62
9.	20-1	21-0	.08	.23	41	1	.98
10.	4-17	0-21	.32	.56	4	38	.10
11.	2-19	0-21	.41	.91	2	40	.05
12.	13-8	3-18	.61	.78	16	26	.38
13.	21-0	15-6	.45	.70	36	6	.86
14.	20-1	9-12	.60	.79	29	13	.69
15.	19-2	17-4	.02	.03	36	6	.86
16	19-2	11-10	.44	.59	30	12	.71
17.	7-14	1-20	.53	.76	8	34	.19
18.	4-17	0-21	.38	.66	4	38	.10
19.	12-9	5-16	.41	.52	17	25	.40
20.	3-18	2-19	.11	.18	5	37	.12

The Long Exile

N = 42 σ = 2.5 K-R20 = .56
M = 14.7 R = 7-19

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1.	16-5	10-10	.47	.60	26	16	.62
2.	21-0	16-5	.61	.99	37	5	.88
3.	20-1	14-7	.34	.48	34	8	.81
4.	21-0	20-1	.48	1.39	41	1	.98
5.	14-7	7-14	.47	.58	21	21	.50
6.	19-2	12-0	.22	.30	31	11	.74
7.	16-5	13-8	.24	.31	29	13	.69
8.	20-1	19-2	.27	.51	39	3	.93
9.	20-1	18-3	.29	.50	38	4	.90
10.	10-11	9-12	.23	.29	19	23	.45
11.	6-15	2-19	.27	.39	8	34	.19
12.	21-0	17-4	.39	.67	38	4	.90
13.	21-0	20-1	.48	1.39	41	1	.98
14.	12-9	3-18	.42	.54	15	27	.36
15.	13- 8	12-9	.13	.16	25	17	.60
16.	19- 2	14-7	.48	.67	33	9	.78
17.	21-0	12-9	.53	.74	33	9	.78
18.	20-1	20-1	.20	.44	40	2	.95
19.	20-1	19-2	.19	.37	39	3	.93
20.	18-3	14-7	.23	.32	32	10	.76

Billy Sunday: Preacher-Showman

N = 42 σ = 2.9 K-R20 = .62
M = 12.3 R = 4-16

Item Number	Number Right and Wrong		r_{pb}	r_b	Total Number		Difficulty Index
	Upper R-W	Lower R-W			Right	Wrong	
1	4-17	1-20	.16	.27	5	37	.12
2.	13-8	13-8	.29	.37	26	16	.62
3.	19-2	9-12	.53	.69	28	24	.67
4.	12-9	11-10	.20	.25	23	19	.55
5.	20-1	16-5	.13	.20	36	6	.86
6.	20-1	11-10	.35	.48	31	11	.74
7.	19-2	19-2	.11	.20	38	4	.90
8.	20-1	17-4	.39	.63	37	5	.88
9.	20-1	17-4	.29	.46	37	5	.88
10.	11-10	7-14	.23	.29	18	24	.43
11.	16- 5	3-18	.66	.83	19	23	.45
12.	7-14	3-18	.33	.45	10	32	.24
13.	21-0	18-3	.56	1.1	39	3	.93
14.	20-1	14-7	.48	.69	34	8	.81
15.	12-9	7-14	.34	.42	19	23	.45
16.	20-1	15-6	.41	.61	35	7	.83
17.	6-15	1-20	.35	.52	7	35	.17
18.	10-11	8-13	.13	.16	18	13	.43
19.	19-2	8-13	.65	.83	27	15	.64
20.	17-4	12-9	.43	.57	29	13	.69

APPENDIX D

Control and Experimental Matching

TABLE 1

Control Group and Experimental Group Ss Matched on Grade Point Average, Brown-Carlsen Pretest Scores, and Academic Class

	Grade-Point Average		Brown-Carlsen Pretest Scores		Class	
	Exper.	Cont.	Exper.	Cont.	Exper.	Cont.
1.	1	1	29	25	2	1
2.	1	1	33	34	2	2
3.	1	1	32	35	4	1*
4.	2	1*	37	39	4	2
5.	1	1	41	41	2	1
6.	1	1	43	42	2	1
7.	1	1	43	42	2	1
8.	1	1	44	44	1	1
9.	1	1	46	46	2	1
10.	1	1	48	49	1	1
11.	1	1	48	48	2	2
12.	1	1	49	49	2	1
13.	1	1	50	50	1	1
14.	1	1	52	52	2	1
15.	1	1	56	56	2	1
16.	1	1	59	58	2	1
17.	1	1	59	59	1	1
18.	1	1	59	60	2	1
19.	1	1	63	62	2	1
20.	1	1	64	64	1	2
21.	1	1	48	46	3	3
22.	1	1	55	56	4	4
23.	1	1	58	57	3	3
24.	2	2	30	34	1	2
25.	2	2	33	32	1	1
26.	2	2	34	34	2	1
27.	2	2	40	34	2	2
28.	2	2	36	36	1	1
29.	2	2	39	38	2	1
30.	2	2	41	46	1	1
31	2	2	41	44	1	2
32.	2	2	47	43	1	2
33.	2	2	48	48	1	1
34.	2	2	52	52	3	2*
35.	2	2	53	53	1	2
36.	2	2	55	55	4	1*
37.	1	1	58	57	3	3

*Indicate where a category was crossed to provide a match.

APPENDIX E

Analyses of Covariance

TABLE 1

Analysis of Covariance of Posttest Scores on Part A of the Brown-Carlsen Listening Comprehension Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	
Between groups	0.41	1	0.41	0.12	n.s.
Within groups	250.17	71	3.52		
Total	250.57	72			

TABLE 1a

Means and Adjusted Means for the Analysis of Covariance on Part A of the Brown-Carlsen Listening Comprehension Test

	Pretest Means	Posttest Means	Adjusted Posttest Means
Control (n = 37)	9.76	13.32	13.33
Experimental (n = 37)	9.81	13.19	13.18

TABLE 2

Analysis of Covariance of Posttest Scores on Part B of the Brown-Carlsen Listening Comprehension Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	
Between groups	14.81	1	14.81	2.42	n.s.
Within groups	434.56	71	6.12		
Total	449.37	72			

TABLE 2a

Means and Adjusted Means for the Analysis of Covariance on Part B of the Brown-Carlsen Listening Comprehension Test

	Pretest Means	Posttest Means	Adjusted Posttest Means
Control (n = 37)	11.27	14.65	14.81
Experimental (n = 37)	12.49	15.86	15.71

TABLE 3

Analysis of Covariance of Posttest Scores on Part C of the Brown-Carlsen Listening Comprehension Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	
Between groups	0.01	1	0.01	0.01	n.s.
Within groups	97.20	71	1.37		
Total	97.20	72			

TABLE 3a

Means and Adjusted Means for the Analysis of Covariance on Part C of the Brown-Carlsen Listening Comprehension Test

	Pretest Means	Posttest Means	Adjusted Posttest Means
Control (n = 37)	5.76	6.14	6.11
Experimental (n = 37)	5.54	6.11	6.13

TABLE 4

Analysis of Covariance of Posttest Scores on Part D of the Brown-Carlsen Listening Comprehension Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degree of Freedom	Mean Square	F	
Between groups	0.80	1	0.80	0.35	n.s.
Within groups	160.84	71	2.27		
Total	161.64	72			

TABLE 4a

Means and Adjusted Means for the Analysis of Covariance on Part D of the Brown-Carlsen Listening Comprehension Test

	Pretest Means	Posttest Means	Adjusted Posttest Means
Control (n = 37)	6.11	8.11	8.06
Experimental (n = 37)	5.76	7.81	7.85

TABLE 5

Analysis of Covariance of Posttest Scores on Part E of the Brown-Carlsen Listening Comprehension Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
Between groups	41.04	1	41.04	5.69 *
Within groups	512.10	71	7.21	
Total	553.13	72		

*p < .05

TABLE 5a

Means and Adjusted Means for the Analysis of Covariance on Part E of the Brown-Carlsen Listening Comprehension Test

	Pretest Means	Posttest Means	Adjusted Posttest Means
Control (n = 37)	12.92	11.27	11.21
Experimental (n = 37)	12.65	12.65	12.70

TABLE 6

Analysis of Covariance of Posttest Scores on the Total Scores of the Brown-Carlsen Listening Comprehension Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
Between groups	59.39	1	59.39	1.75 n.s.
Within groups	2408.54	71	33.92	
Total	2467.93	72		

TABLE 6a

Means and Adjusted Means for the Analysis of Covariance on the Total Scores of the Brown-Carlsen Listening Comprehension Test

	Pretest Means	Posttest Means	Adjusted Posttest Means
Control (n = 37)	45.81	53.57	53.67
Experimental (n = 37)	46.24	55.57	55.46

TABLE 7

Analysis of Covariance of Posttest Scores on Fact Items of the Rossiter Listening Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
Between groups	31.69	1	31.69	4.73*
Within groups	475.81	71	6.70	
Total	507.50	72		

*$p < .05$

TABLE 7a

Means and Adjusted Means for the Analysis of Covariance on Fact Items of the Rossiter Listening Test

	Pretest Means	Posttest Means	Adjusted Posttest Means
Control (n = 37)	10.76	11.19	11.37
Experimental (n = 37)	11.49	12.86	12.69

TABLE 8

Analysis of Covariance of Posttest Scores on Idea Items of the Rossiter Listening Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	
Between groups	22.32	1	22.32	3.04	n.s.
Within groups	521.81	71	7.35		
Total	544.13	72			

TABLE 8a

Means and Adjusted Means for the Analysis of Covariance on Idea Items of the Rossiter Listening Test

	Pretest Means	Posttest Means	Adjusted Posttest Means
Control (n = 37)	10.62	10.22	10.36
Experimental (n = 37)	11.05	11.59	11.46

TABLE 9

Analysis of Covariance of Posttest Scores on Inference Items of the Rossiter Listening Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	
Between groups	11.45	1	11.45	1.79	n.s.
Within groups	454.13	71	6.40		
Total	465.58				

TABLE 9a

Means and Adjusted Means for the Analysis of Covariance on Inference Items of the Rossiter Listening Test

	Pretest Means	Posttest Means	Adjusted Posttest Means
Control (n = 37)	7.62	7.73	7.90
Experimental (n = 37)	8.08	8.86	8.69

TABLE 10

Analysis of Covariance of Posttest Scores on Total Scores of the Rossiter Listening Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
Between groups	142.14	1	142.14	5.24*
Within groups	1927.72	71	27.15	
Total	2069.86	72		

*$p < .05$

TABLE 10a

Means and Adjusted Means for the Analysis of Covariance on Total Scores on the Rossiter Listening Test

	Pretest Means	Posttest Means	Adjusted Posttest Means
Control (n = 37)	29.00	29.22	29.89
Experimental (n = 37)	30.62	33.35	32.68

TABLE 11

Analysis of Covariance of Posttest Scores on Total Scores of the Xerox Listening Test for Matched Subjects in the Experimental and Control Groups, using Pretest Scores as the Covariate

Source	Sum of Squares	Degrees of Freedom	Mean Square	F
Between groups	7664.77	1	7664.77	8.33**
Within groups	65320.11	71	920.0	
Total	72984.88	72		

**p < .01

TABLE 11a

Means and Adjusted Means for the Analysis of Covariance on Total Scores of the Xerox Listening Test

	Pretest Means (Test A)	Posttest Means (Test B)	Adjusted Posttest Means
Control (n = 37)	89.46	115.70	116.49
Experimental (n = 37)	93.30	137.65	136.86

TABLE 12

F Ratios for all Pairwise Scheffé Contrasts Between Mean Scores of Experimental Group on Selections Equated for Difficulty Based on Dale-Chall Ratings+

Selection	2	3	4	5	6	7	8	9	10	11
1	7.12	4.40	.98	.09	.71	6.08	7.58	.56	.28	.88
2		.41	2.84	8.34	11.80	.06	27.63**	3.50	4.32	12.20
3			1.18	5.46	8.40	.15	22.87*	1.66	2.26	8.78
4				1.58	3.27	2.14	13.60	.05	.19	3.56
5					.29	7.25	5.76	1.03	.64	.40
6						10.56	3.53	2.41	1.79	.01
7							26.10**	2.74	3.48	10.95
8								11.54	10.16	3.37
9									.04	2.67
10										2.03

*p .05 **p .01

+Procedures followed as described by Roger E. Kirk, Experimental Design Procedures for the Behavioral Sciences, (Belmont, Calif.: Brooks/Cole Publishing Company), 1968, Pp. 90-91.

A P P E N D I X F

Assessment of Improvement

Through Time

on

Daily Test Scores

TABLE 1

Analysis of Variance of Daily Test Scores of Experimental Group on Selections Equated for Difficulty Based on Dale-Chall Ratings

Source	SS	df	MS	F
Between Selections	569.62	10	56.96	5.09*
Within	4620.27	413	11.19	
Total	5189.89	423		

*p = <.01

TABLE 2

Title of Selection, Mean Daily Test Scores, Standard Deviations and Dale-Chall Ratings

	Title of Selection	Mean Score	SD	Dale-Chall Rating
1.	To Build a Fire	12.83	3.27	6.2
2.	Top of the World I	10.81	4.26	6.2
3.	Top of the World II	11.29	3.78	6.2
4.	Home Girl	12.10	2.47	5.5
5.	Anything Can Happen I	13.05	3.38	4.9
6.	Anything Can Happen II	13.46	3.87	5.2
7.	The First and the Last	11.00	3.54	6.4
8.	Virgin Birth	14.89	2.86	5.2
9.	A Piece of News	12.27	2.75	5.6
10.	On the Beach	12.43	3.18	6.3
11.	Footfalls	13.54	3.03	6.1

APPENDIX G

Student Ratings

of

Texts and Tests

TABLE 1

Correlations of Experimental Group Ratings of Difficulty of Tape, Difficulty of Test, Interestingness of Tape and Test Scores for Daily Test Selections Equated for Difficulty Based on Dale-Chall Ratings
(n = 424)

	Difficulty of Test	Interestingness of Tape	Test Score
Difficulty of Text	.58*	- .32*	- .17*
Difficulty of Test		- .23*	- .20*
Interestingness of Text			.38*

*p < .01

TABLE 2

Correlations of Experimental Group Ratings of Difficulty of Tape, Difficulty of Test, Interestingness of Tape and Test Scores for Eighteen Daily Test Selections
(n = 693)

	Difficulty of Test	Interestingness of Tape	Test Score
Difficulty of Text	.64*	- .40*	- .34*
Difficulty of Test		- .33*	- .34*
Interestingness of Text			.47*

*p< .01

TABLE 3

Correlations of Mean Experimental Group Ratings of Difficulty of Tape, Difficulty of Test, Interestingness of Tape and Mean Test Scores for Eighteen Daily Test Selections

	Difficulty of Test	Interestingness of Tape	Test Score
Difficulty of Text	.94*	- .83*	- .79*
Difficulty of Test		- .90*	- .83*
Interestingness of Text			.72*

*$p < .01$

Note: The data used in Table 2 were individual subject ratings of texts. The distributions used for the analysis in Table 3 were the means of these individual ratings for each text. Thus the variance in the distributions used for the analysis presented in Table 3 was greatly reduced, which accounts for the higher values for r.